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A Grand Operation of Congress.

We learn that the assignees of three patent rights, which, together, yield perhaps a million per annum in tariffs, have combined to induce Congress to extend them this winter, for seven years longer. They are said to have raised a a fund of $100,000 to be distributed at this point to carry through their object. We have seen signs satisfying us of the truth of this story. Their champagne is already flowing in Washington like water, and their canvas-backs are also "a roasting" right merrily. Do any members want a few cold hundreds, or, it may be, thousands, to bet at faro? We shall shortly give all the particulars of this scheme, if we can obtain them.—[Washington Star.

Money, champagne, and gluttony are, it seems, the weapons to be employed to *buy up votes* to carry through schemes whose annual tariffs yield a million of dollars.

Traitors to the honor of the American name; you would "steal the Apostolic keys of heaven and appropriate them as tools for crafty knaves to shut out Virtue, and unfold the gates which heaven itself has barred against the lust and avarice of sordid ambition." The comedy of Esau is again to be enacted, the national birthright is bargaining away for a mess of pottage—who is the bidder—must be sold—this is the last call, going, going, going to Cormorants who feed upon the honor and the integrity of American Freedom.

Berdan's Gold Machine in England.

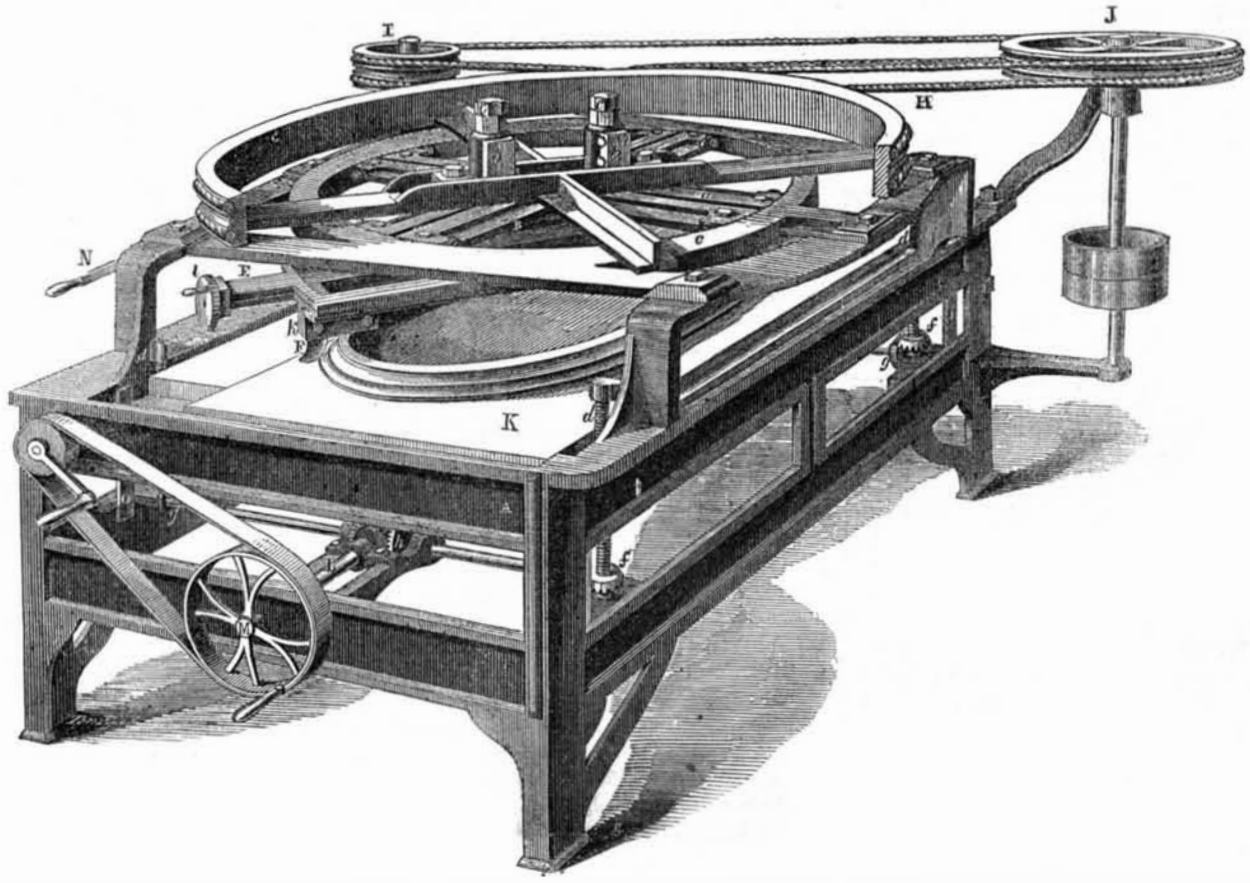
In the "London Mining Journal," and the "Times," we noticed very favorable reports of the operations of this machine, which appear to confirm more than was said of it in our last Volume. Prof. Ansted, an eminent mineralogist, has been making experiments with it on California quartz, and has reported on the subject. In the report it is stated that gold was obtained at the rate of 4 oz., 4 dwts., and 21 grs. per tun, and valued at £17 18s. 3d., from some Californian quartz in which there was barely a trace of the metal visible when first examined, while some gossan from the copper lodes at Poltimore, North Devon, also yielded at the rate of 1 oz., 12½ dwts. It is also stated by the Professor that ores containing no more than half an ounce to the tun, could be profitably worked by this machine in England.

Mr. Calvert, a well known mineralogist, has also been operating upon some English gold quartz, and he states that he obtained 2 oz. 4 dwts. 10 grs. per ton; its qualities as an amalgamator are very highly extolled.

M. Breant, of Paris, recently left 100,000 francs to the Institute, to be by it awarded to the discoverer of the cause of the cholera, or a cure for it. The interest of the money is in the meantime to be used in rewarding or encouraging the authors of any lesser discoveries in medicine. The Emperor has just signed the act permitting the Institute to accept the legacy and the conditions under which it is made.

Six new locomotives are about completed for the Hudson River Railroad. They are of Paterson, N. J., manufacture.

MACHINE FOR TURNING OVALS.



W. G. Merrell, of Auburn, N. Y., has invented and made application for a patent on a machine for turning or cutting ovals, an illustration of which is herewith presented in a perspective view.

The principle of this machine is that of the trammel, an instrument in common use for marking ovals. This implement is merely a plate, having two slots through it, crossing each other at right angles, and having a stock with two pins in it fitting in the slots, with a pencil attached to its end. By turning the stock the pencil will describe an oval in consequence of the slots compelling the pins to work in right lines. This machine is an application of the principle to the turning of oval forms.

A is the frame of the machine, on the upper part of which is placed a trammel plate, B, having in it two slots, *a a*, crossing each other at right angles. Projecting a little above and below the trammel is the circular way, C; E is the cutter stock on one end of which is secured the cutter, F. The stock has two pins or screws, *b b*, which pass upward through the slots, *a a*, in the trammel plate, and also pass through a driving pulley, G, part of which is removed to show the machinery, which rests or bears on the upper side of the circular way, C. These pins have nuts, *c c*, on their upper ends by turning which the pulley G, may be made to bear firmly upon the upper side of the way, C, and the cutter stock against its under side.

A band, H, passes around the pulley, G, and also around the pulleys, I J. A driving belt is applied to the fast and loose pulley, on the same shaft with J, and power is communicated by the belt, H, from J to G, I serving merely to bring the band entirely around G.

The cutter, F, as the stock, E, rotates with the motion of the pulley, G, will cut in an oval form, as the center of motion is changed more or less from the intersection of the two slots by the sliding of the pins in the slots; K is a bed on which the stuff to be turned is secured. The bed is placed horizontally beneath the cutter stock, and is supported by four screw rods *d d*, which pass through nuts attached to the bed. Each screw rod has a bevel wheel, *f*, at its lower end gearing with *g*, on the same shaft with the bexel wheel, *h*, which is propelled by another on the shaft, L, which is turned by the hand wheel, M, by turning which the screw rods will be turned, and the bed, K, on which the shaft rests, elevated or depressed as may be desired.

The cutter, F, is fitted in a stock, *k*, which works on a projection in the cutter stock, and a screw passing through the stock, *k*. On the outer end of the screw-rod, *j*, there is a small toothed wheel, *l*, which, as the stock, F, revolves catches into spring spurs upon the frame. These spurs are elevated or depressed so as to act upon the wheel, *l*, by means of dogs attached by rods to a lever, N, by moving which towards the frame the upper dog will be depressed, and the upper spur will be forced downward sufficiently to catch the wheel, *l*, and thus move the cutter outward every time the wheel passes the spur. Moving the lever in the opposite direction will cause a reverse motion of the cutter.

We think this an excellent machine, it is capable of being applied to a much greater variety of work than the old oval chuck, and is in every way superior to it. We have seen the machine, and the work executed by it, and can recommend it to the attention of all interested. A machine can be seen at 57 White street, in this city. For further information address the inventor, W. G. Merrell, at Auburn, Cayuga, Co., N. Y. Application has been made for a patent.

The Irving Steam Boiler.

We were present, not long since at some experiments at the Porcelain Works of C. Cartlidge & Co., Green Point, L. I., instituted for the purpose of testing the capabilities of the Irving Boiler, illustrated by us in the first number of the present Volume. These experiments were carried on under the superintendence of Messrs. Truman Cook & Charles Ehman, from whose report, kindly furnished us for publication, we condense the following statement:—

These experiments were begun at a time unanticipated by the proprietors of the Boiler, so that no undue preparations could have been made. The boiler used was the first one built, and was quite imperfect; drawings were shown us in which decided improvements were to be seen. Its outside diameter is four feet, and its extreme height six feet nine inches. It is supplied by a common force pump, receiving its feed-water from an elevated tank.

Steam was raised with wood to 70 lbs., coal was then put in and the engine started at 7 o'clock A. M., the steam falling. The pressure was soon regained, and kept at 70 lbs., with a fluctuation of 2½ lbs. from this point. The trial was continued without intermission for ten hours—the load of the engine appeared uniform.

The total amount of coal consumed was 287 lbs. The evaporation of water from a temperature of 44° was 3,732·6 being equal to an evaporation of 13·003 lbs. of water to each pound of coal used.

After this test had been made, the water was blown from the boiler and not the *least particle* of deposit was found within the tubes, after the most thorough examination, although an analysis of the water used was made by Prof. A. K. Eaton, who found in one pint 354 millegrammes of residue dried at 250 degrees. This consisted of lime, 43·13; sulphuric acid, 68·70; chlorine, 27; magnesia, 87·17; water and organic matter, 127·52; traces of alumina and soda, and loss, ·48—total, 354.

The office of the Irving Boiler Co. is at 343 Broadway, where all letters of inquiry should be addressed.

The dock of the Cunard steamships at East Boston is to be enlarged, so as to admit of the largest steamers of the Cunard Company, the work to be commenced immediately.

The Africa brought the news last week of a complete defeat of a Turkish army, in which 4,000 were slain by the Russians.

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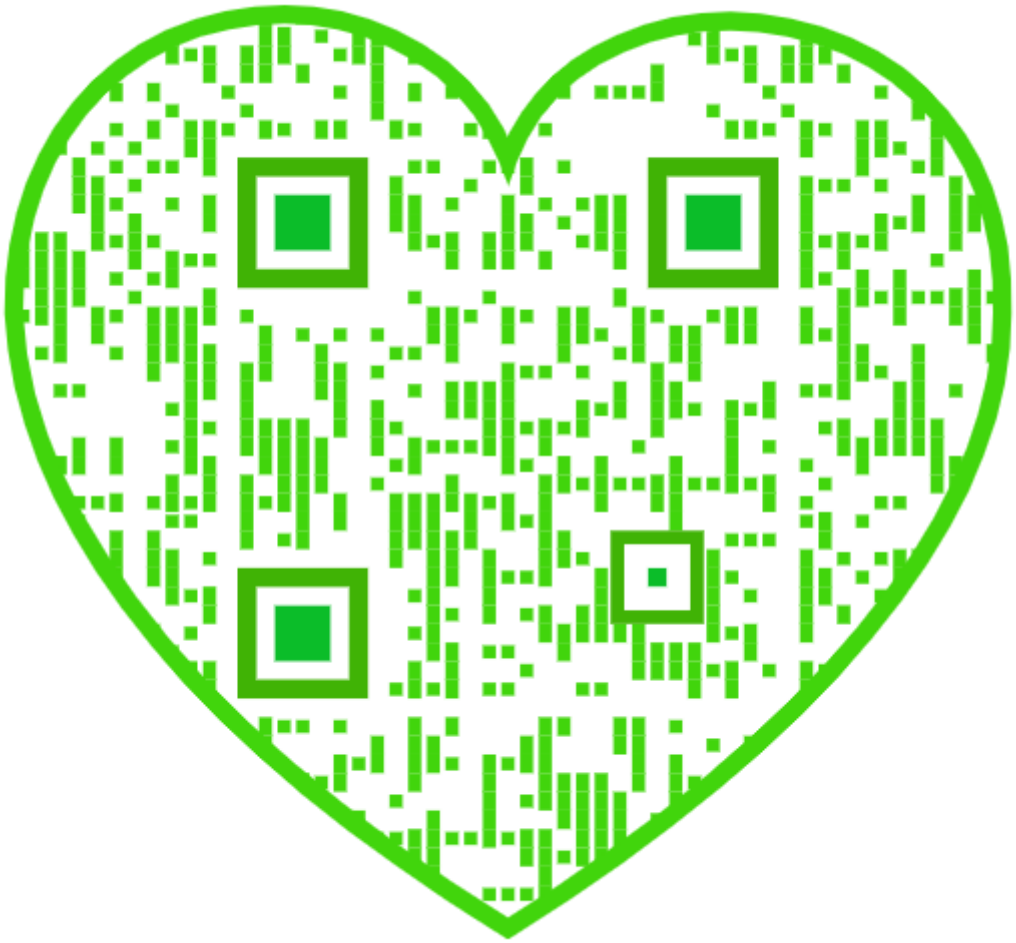


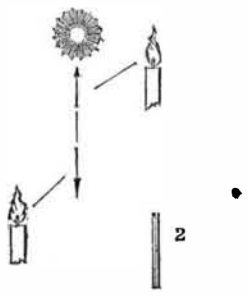
Imponderable Agents.---No. 4.

[Second Series.]

LIGHT—UNDULATORY THEORY.—The Abbe Moigno, of France, author of an excellent work on telegraphs, and editor of a scientific periodical (Cosmos) Paris, has published a paper on his experiments with Noberts' plates, which fully confirm the undulatory theory. "M. Nobert," he says, "a German optician, has succeeded in tracing upon a surface of polished glass, perfectly parallel lines, the distance apart of which is only the five-thousandth of a millimeter (0·000008 inch) the length of a wave of light, and has desired to make his marvellous skill subserve the triumph of the undulation theory. For this purpose he has executed three plates, which were sent to us by M. Albert, of Frankfort. We immediately appealed to the optical resources of M. Jules Duborg, and the skill of M. Natchet in microscopes, and with the German instructions in hand we repeated the fundamental experiments; they have fully satisfied us; they are the true touchstone of the optical theories.

In the center of a quadrangular strip of glass are traced seven groups of equi-distant parallel lines; the lines of each group are equally spaced; the different groups are separated from each other by a greater interval; in passing from one group to another, the distance of the lines apart augments, and the seven distances are proportionate to the wave-lengths of the seven principal colors of the spectrum; violet, indigo, blue, green, yellow, orange, red; the following are the distances expressed in millionths of a Parisian line; 1st group, violet, 900; 2d, indigo, 1000; 3d, light blue, 1075; 4th, green, 1188; 5th, yellow, 1325; 6th, orange, 1450; 7th, deep red, 1,600.

When these seven groups have been traced upon the plate, it is covered with a very thin protecting slip with parallel faces, and there is engraved upon this slip with the point of a diamond, a star, a double arrow, and a double candle with its flame, as is shown in the accompanying figure.



To observe, we take a microscope magnifying from 16 to 27 times; if the lenses have not, like those of the French microscopes, a very small diameter, a small disk of blackened metal pierced with a small hole, is placed in the mounting of the objective; the plate is placed on the table of the microscope, with the arrow pointed towards the light (the best of all lights is that from a white cloud); between the mirror and the light is erected five or six inches from the mirror, a screen pierced with a horizontal slit six inches long and one-third of an nch wide, which throws the light upon the side of the mirror corresponding to the flame engraved upon the plate; whilelooking through the eye-piece, the mirror is gently turned, and soon seven colored bands or seven flat or uniform tints appear in the field of vision, representing the sevenl colors of the solar spectrum separated by dark very distinet and very brilliant intervals. The plate may be placed in two different ways on the table of the microscope; with the protecting plate either above or below. In the first position, the interferences which produce the colors, evidently take place in the sheet of air between the plate and its cover, and the spectrum produced may then be called the air spectrum; in the second position, the interferences take place in the glass, and the spectrum is the glass spectrum. Now, observation shows that these two spectra are completely identical, that the colors are exactly the same, as they ought to be according to the theory of undulations, which thus receives a simple and striking confirmation.

COLORS.—It is very different to explain the phenomenon of black bodies; strictly speaking, there may not be a black substance in nature. If we take a pen and make a single black line with ink upon a sheet of white paper, and then examine that line through a common magnifying glass, no black line can be seen, but instead of it three bands of color, comprising the three primitive colors in a ray of light. Figure 2 represents this phenomena, the right line is a deep indigo blue, at the side of it is a light blue band, on the other side is the red, and on the other the yellow ray. Any person can perform this experiment, and by the aid of a pen, a sheet of paper, and a magnifying glass, behold all the colors of the rainbow displayed by a line of black ink. Every black line, on a printed card, having a white ground, if viewed through a magnifying glass glows with all the beautuous hues of the solar spectrum. Sir Isaac Newton's philosophy of colors comprised seven distinct colors in a ray of light; but Dr. Hay, of Edinburg, or Sir David Brewster (the credit, we are told, should be divided among them) made the discovery in 1823, that there were only three colors in a ray of light, namely, blue, red, and yellow. Practical men knew long before this fact was announced, that there were only three primitive colors in nature, and the writer of this, before ever he saw Brewster's account of the matter, was well acquainted with the fact. A black body appears to nullify the rays of white light, not absorb them, or else it should become luminous. In all likelihood the effect of a black color (it is convenient but not philosophical to call *black* a color) in a body, is caused by the fineness of the subdivided parts of the body; this is the opinion of Prof. Horsford as set forth in his paper read before the American Association for the Advancement of Science. Be that as it may, a black color can be produced, by the primitive colors of a ray of light being made to over-lie one another. Thus if a piece of fine white woolen cloth be dyed a deep yellow in a bath of quercitron bark; then dyed on the top of the yellow a deep red, in a bath of cochineal; then dyed on the top of the red, a deep blue in a bath of the hyposulphite of indigo a beautiful black will be the result. The piece of cloth must be well washed out of every bath; the chloride of tin is employed as a mordant for the yellow, and tartar and the chloride of tin is employed as a mordant for the cochineal. Silks and woolens of a yellowish color are whitened by passing them through baths containing a dilute solution of red and blue coloring matters. The method here described of producing a black on woolen cloths may be valuable to many of our readers. Scarlet and red cloth can be changed into jet and blue black by simply boiling them in a bath of *chemic*—hyposulphite of indigo. The exact quantity to use cannot be given; care and a little experience will enable any person to use the proper quantity for any amount of goods.

Rotary Winds.

It is well known that there has been considerable disputation among scientific men respecting the correctness of Prof. Redfield's theory of rotary hurricanes. The "Salem (Mass.) Register contains the statement of Capt. Upton, of the bark "Argentine," which appears to have a bearing upon this theory of storms, and will be interesting to the scientific world:

"On the 25th of November, latitude 26° N., longitude 60° 30′ W., the wind being S. S. W. at the time, the barometer commenced falling very rapidly, near sunset, and continued to fall till it went as low as 29 inches. Being satisfied that we were in the vicinity of a hurricane, we began to shorten sail immediately; and, at midnight hove to, head to the westward, under close-reefed maintopsail—blowing very heavily, accompanied with the most vivid flashes of lightning from every part of the horizon, without intermission—so much so that the whole heavens appeared one vast sheet of flame. At noon of the 26th took in maintopsail—barometer rising (29·30—the wind backing round to N. W. by the eastern board.

At midnight wore ship to W.S.W., set the close reefed topsails and foresail, weather still moderate—almost calm—till 4 A. M., 27th, when the barometer began to fall, as before, till it again went to 29. Took in the topsails and foresail, and hove to under main spencer and a tarpaulin in the mizzen rigging—blowing with inconceivable fury. The sea was thrown into the most violent agitation, on account of the rapidity with which the wind changed, which caused it to tower up in a conical shape truly terrific! The wind continued to haul to the southward till the morning of the 28th, when it again reached S.S.W., the point from whence it started—thus making a complete circuit of the compass. It now began to moderate, the barometer remaining the same, and being fully convinced that we had passed from the southern edge to the center, where we were becalmed, and that by continuing our course N.W., we must again cross its track, I thought it advisable to keep the vessel's head to the southward—as recommended in Prof. Redfield's treatise, and making sail stood S. E. thirty miles, when the mercury began to rise immediately and it cleared up. Had we not pursued this course, I am satisfied that we should again have encountered the hurricane in all its fury.

During the heaviest part of the storm, the mercury "danced up and down" in the barometer three-tenths. The circular or rotary course of this hurricane is palpable enough to convince any one of the soundness of the theory which I believe Prof. R. was the first to promulgate."

[The rotary theory of storms we believe is correct. We know that all the severe storms which take place around New York are rotary. To this we have paid particular attention during the past few years, and have never seen it fail in a single instance. There is one other feature about the storms which take place in this vicinity and which demands more attention, namely, severe storms most generally take place during the hours of night. It commences to blow generally between 7 and 8 P. M., and continues more or less violent during the whole night, then moderates when the day dawns.

Electric Gas.

The proverb says, "There is nothing new under the sun;" we have been led to doubt the truth of this from having witnessed a private exhibition of "electric gas." That is, gas produced from water by means of electricity, and by which is developed, for the first time, the extraordinary phenomena of burning the two gases together, without the least fear of explosion, which the most scientific and learned of men have ever hitherto deemed an impracticability.

The gases produced by electricity are free from all possibility of explosion. Its production requires no expensive materials, nor are large premises necessary, whilst all existing pipes and lamps may be used if requisite; and in the economy of production there will be a saving of at least 50 per cent. upon the present cost of coal gas.

Mr. Gamble, a scientific gentleman connected with gas works and railways, has made a re-report on this electric gas, in which he says:—

"I cannot find language sufficiently expressive to convey the astonishment I experienced at witnessing the effects of the electro-magnetic machine in the production of gas applicable for the purpose of artificial light and heat by the decomposition of water. Water is found, on a chemical analysis, to be composed of two permanently elastic fluids, or gases called oxygen and hydrogen. When water is decomposed, an enormous increase in volume is the result; this increase is about 2,000 times. It has been long known that water is decomposable by electrical agency, but this has been generally effected by the action of a galvanic trough, at an expense so great as to be commercially prohibitory. But by the magnetic apparatus the expense is very trifing, being little more than interest on first cost of the machine, with a small addition for renewals, and the cost of the motive power. The decomposition of water for the purpose of obtaining a gas applicable for the production of artificial light and heat, has long engaged the attention of chemists, and numerous discoveries professing to attain this desideratum have been made. All these, (so far as I am acquainted with them) have for their object the separation of the hydrogen gas only; no attempt, I believe, has hitherto been made to make use of the oxygen. The general mode in which the hydrogen is obtained is by passing steam through scrap iron, or a variety of other materials heated to a high temperature; in this manner the vapor of water is decomposed, the oxygen unites with the heated solid body, and the hydrogen is liberated in the gaseous form, and collected in a gas holder. But the gas resulting from the decomposition of water by the magnetic machine is altogether different. Here is collected not merely the hydrogen, but the oxygen also; this increases the volume of production one-third, and the gas is altogether different in its composition.

It is an invention, the most gigantic of the age of wonders."—[London Mining Journal.

[The above is a very long quotation, and we would not republish it unless we thought of accomplishing some good thereby. We will therefore point out the errors contained in it, and show the utter unscientific qualifications of its author, who is reported to be "a scientific gentleman." And we do this as a duty, because we have seen the above republished in many of our exchanges, and we certainly do not wish nonsense to go abroad uncorrected under the panoply of science.

It is well known to almost every child in our land, that water is composed of hydrogen and oxygen, and when decomposed into these elements, they increase in bulk about 2,000 times their volume—as water. But it is not true that water has generally been decomposed heretofore, by passing steam through red hot scraps of iron, by which process the hydrogen is set free, while the oxygen unites with the metal. Zinc and iron, submitted to the action of dilute sulphuric acid, will generate hydrogen by decomposing the water; but platinum heated to a white heat, if plunged into water, will set both its oxygen and hydrogen free.

But water has been decomposed into its elementary gases, many times by the very plan set forth above, namely, electricity. This was Paine's plan of decomposing water to obtain his light. It is more than twenty years since this was first done by the Magneto-Electrical machine of Mr. Saxton, a scientific American residing in London: he accomplished the very thing said now so be "the most gigantic invention of this age of wonders," and in the very city where the above affair has been thus unblushingly announced by *a scientific gentleman.*

In 1838 Dr. Page, formerly of the Patent Office, made a great improvement on the Magneto-Electrical machine, by which powerful currents were generated, perfectly applicable to the decomposition of water.

The gases of water are not fit for illumination, unless burned on lime or chalk, forming the Drummond Light. This light is very expensive and troublesome. The gases of water cannot be conveyed and used in pipes like our common carburetted hydrogen, nor can they be used with safety. A jar containing hydrogen and oxygen in the proportions for forming water, will explode with great violence if a spark of electricity be passed through it—these gases will also explode if a light of any kind be applied to them.

The statement above, that the gases of water "are free from all possibility of explosion," is an unqualified untruth, and so is all that is stated about its cheapness of production. These gases can be safely burned by well-known apparatus made for the very purpose, still they are dangerous. They produce, when burned, an intense heat; a heat so great, indeed, as to melt platinum like wax, by Dr. Hare's blowpipe, but unless burned upon lime or some solid incandescent substance, as we have already stated, they will produce only great heat, but not good light. In the above extract which we have quoted, there is nothing new except that which is *untrue.*

Fine Cotton.

The Augusta (Ga.) Constitutionalist chronicles the sale in that city of a lot of 17 bales of cotton at 11 cents per pound. It was from Oglethorpe county. We have a higher figure than that, and in Georgia cottons also: two hundred bales from Green county were sold at 12 cents; the cotton was very superior, both in color and staple.

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[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING DECEMBER 20, 1853.

GRAIN ANG GRASS HARVESTERS—By J. E. Brown & S. L. Bartlett, of Woonsocket, R. I.: We claim the double-bladed or two edged knife, or its equivalent, so constructed as to cut in each direction, as it is vibrating, as described.

Second, the knife in combination with the curves and teeth.

Third, we claim the mode of operating the double-bladed knives or cutters, by means of the rack and pinions, as set forth.

Fourth, we claim the arrangement of the devices which communicates the motion from the internal part of the driving wheel to the rack, as set forth.

Fifth, the gearing, arranged and combined so as to work within the main wheel, and operate the crank upon the axle of the main wheel, as described.

OPERATING BRAKES BY SIGNAL CARDS—By William G. Creamer, of New Haven Co., Conn.: I do not claim the use of springs or weights to operate the brakes of a car, nor do I claim the use of a cord, or its equivalent, to act upon such springs or weights, or directly upon the brakes; neither do I claim the use of a cord for the purpose of transmitting signals; but I claim the described method of attaching the lines that operate the springs or weights to the signal line, so that the engineer may be able to close all the brakes by said line, while the same line may be used for transmitting signals from the rear of the train to the engineer without operating the brakes.

MANURE AND OTHER FORKS—By B. H. Franklin, of Worcester, Mass.: I claim making the tines of forks three sided, as described, whereby I diminish the weight, retain the strength, improve the holding properties of the fork, and at the same time prevent its choking, and cheapen the article.

GRAIN AND GRASS HARVESTERS—By Urish H. 'Goble, of Springfield, Ohio: I claim, first making the ground or driving wheel with a conical tread to counteract the tendency of the machine to run into the uncut grain to prevent the side draught, and to better balance the machine by throwing the heft to the outside or from the uncut grain, as described.

I also claim so hinging the platform immediately in rear of the cutters, and giving it a rising and falling motion, by means of the cam and lever, or their equivalents, when said motions are made to conform to the motions of the reel or rake, to retain and then facilitate the discharge of the cut grain from the platform in bunches, as described.

SHOES TO WINNOWERS—By Joseph & James Montgomery, of Lancaster, Pa.: We claim the construction and arrangement of the ordinary shoe, so as to receive an extra shoe and door, as set forth.

MANURE CRUSHERS AND SOWERS—By T. F. Nelson, of Clark Co., Va.: I claim the combination of the fluted or toothed cylinders, with the toothed shaft operating as described, for the purpose of grinding and distributing guano or other pulverized manures, as set forth, the whole being in combination with any ordinary seed planter.

GRAIN AND GRASS HARVESTERS—By Wm. & Thomas Schnebly, of New York City: We claim the method of arranging the gear in combination with the movable plate, to which the crank pin is fastened, said movable plate being located on the flange of the second pinion, by which method we can increase or diminish the lateral distance of the motion of the cutters, as described.

We claim the method of constructing the hollow guard fingers, each one being a single piece, only substantially as described.

We claim the self-acting rake with jointed fingers, in combination with the guide rods upon which it is made to slide back and forth, as described.

POWER RAKES—By H.N. Tripp, of Alfred, Me.: I claim combining with the rake head and shafts a set of levers and back draught bars, as set forth, so that by the conjoint action of the forward draught of the horse and the back draught of the attendant, the rake may be either turned up or off the ground, and supported on its wheels, or turned down so as to bring its teeth in contact with the ground, as specified.

HULLING AND SCOURING COFFEE—By R. P. Walker, of New York City: I claim the combination of the springing rubber flaps, or scourers and polishers, with the angularly set hullers or beaters, the whole being constructed as set forth.

[See notice of this invention on page 332, Vol. 8, Sci. Am.]

COTTON PRESSES—By J. B. Armstrong, of Barnwell, S. C.: I claim the method described of holding the bale under compression, and preventing it from springing or yielding during the stitching and roping of the same whilst the platen is being run down or back, by means of a false top or platen, hooked or otherwise hitched to the bed, and arranged to work in connection with the main platen, as specified, whereby time is economized in the operation of the press, as set forth.

[See notice of this invention on page 76, Vol. 8.]

ATTACHING HOOKS AND EYES TO CARDS—By Charles Atwood, of Birmingham (Derby), Conn.: I do not claim the crimping and perforating of cards with mortice-like holes, for the purpose of attaching hooks and eyes to, as that was secured to me in a patent dated September 25, 1849.

But I claim the crimped and perforated cards, combined with thread or thin splints, to fasten hooks and eyes to them, as described.

I claim also the attaching of hooks by the aid of a block, clamp and cords, or by means substantially as described.

[This invention is noticed on page 236, Vol. 8, Sci. Am. as Fowler's improvement; Mr. Atwood proved to be the original inventor.]

CANDLE MOULD MACHINES—By D. E. & M. Battershall, of Troy, N. Y.: We claim, first, the arangement for cutting, centering, and holding the wicks at one and the same operation, by means of the cutter, guide plate, jaws, springs, tumblers, crank arms, connecting rods, horizontal sliding bar, pawl, eccentric plate, and vertical sliding bar, the respective parts being arranged and operating as described.

Secondly, we claim the wick tightener, constructed and operating as described.

STAMPING PATTERNS ON ROLLERS—By James Baxendale, of Providence, R. I.: I claim stamping rollers for printing cotton or other textile fabrics, by means of a punch which is attached to a weighted arm or lever, raised by a cam and allowed to fall on an elastic gauge at regular intervals of time, while the roller is moved in the direction in which the pattern is to be repeated, as set forth.

[We should think this a good improvement.]

HOT-AIR FURNACES—By James Bolton, M. D., of Richmond, Va.: I claim the division into compartments of the air chamber surrounding a stove furnace, pipe or other contrivance for warming the air which it contains, so that the warm air may be drawn off by flues from each compartment without interfering with the supply of warm air from the other compartments.

METALLIC TRUNK FRAMES—By Lazare Cantel, of New York City: I do not confine myself to the use of this frame with leather trunks, as it may be used with other characters of trunks, and with carpet bags, hat cases, or similar articles. I am aware that the strip or plate on three sides has been used, but I am not aware of any joint or frame having been made of a bent plate or strip with ribs and grooves, as specified.

I do not claim, in general, the metallic frames, made with tongues and grooves, and hinged together at one side for the joints of trunks; but I claim forming the joints of trunks, by arming the edge of the material of which the body is composed with sheet metal covering, crimped in the form of the tongues, as specified, whereby I obtain a not only a protection to the surface from wear, but also the effect of a stiffening frame, as well as strength in the tongues and that at a small expense.

SHUTTLES—By David Carroll, of Baltimore, Md.: A closed shuttle has been used for sewing cloth where a cap instead of a bobbin is employed: this I do not claim.

I claim, in combination with the bobbin of an ordinary shuttle, the hinged guard projecting from and over the point towards the heel of the bobbin, for the purpose of preventing the thread or yarn, when paying off too fast, from looping or tying, as described.

CAR BRAKES—By John D'homergue, of New York City: I claim the arrangement of the cams upon the blocks, and within the sheaves, so as to press simultaneously against the inner periphery of said sheaves by the action of the tri-branched ring, as set forth.

SODA WATER FOUNTAINS—By Alex. Frankenberg, of Columbus, O.: I claim the arrangement and combination of the stop-cock apparatus, with reservoirs, as set forth.

JOINTING TABLE TOPS—By W. J. Hatfield, of Dayton, O.: I claim the method described, of jointing and hinging tables, by means of rotary cutters arranged and operating as specified, whereby time and labor are economised and greater accuracy is insured, as set forth.

VULCANIZING CAOUTCHOUC COMPOUNDS—By L. O. P. Meyer, of Newtown, Conn.: I claim the producing of smooth and glossy surfaces upon the hard compounds of caoutchouc and other vulcanizable gums by means of the use of oil or other equivalent substances applied to the surfaces of the prepared gum, and between the gum and the plates of metal or the moulds, as described.

HAND LOOMS—By J. A. Mitchell, of Ringgold, Ga.:—Having described the operation of my piano hand loom, I claim the combination of the keys or pegs, through the rods, levers, links, and springs, or their equivalents, with the treddles, as described, whereby I am enabled to operate the harness of hand looms, by a movement of the fingers instead of the feet.

SAWING AND PLANING CLAPBOARDS.—By Ephraim Parker, of Rock Island, Illinois: I claim planing or dressing the inside of two clap boards at the same time, by means of the combination of the saw, parting guide, one cutter head, and the adjustable metallic beds; the above parts being arranged and operating as described.

[See engraving of this invention on page 356, Vol. 8.]

CARRIAGES WITH SHIFTING SEATS—By Godfrey Simon, of Reading, Pa. Patented in England March 4, 1853: I claim the manner described of constructing, arranging and applying or using the removable front seat, foot board and dash-board, and of adapting the body of the carriage thereto, as described.

SCREW FOR PLANKING SHIPS—By Solon Staples, of Topsham, Me.: I do not claim the use of screws generally in planking vessels, but I claim the combination of the shank, its arm, and screw, H, with the brace, screw, I, and chain, constructed and combined in the manner described.

GUIDES FOR SEWING ON BINDING—By H. L. Sweet, of Foxborough, Mass.: I claim the doubling guide, as not only made with a flat mouth or one capable of receiving the ribbon, tape, or binding in a flattened state, but with a bent channel or sides, such as shall gradually bend or double it, and discharge it at the other end in a double state, ready to be applied to any article conveniently placed to receive it and leave it sewed thereon, as stated.

HORSE-SHOE—By Wm. H. Towers, of Philadelphia, Pa.: I do not claim the employment of flanges or lips on the upper surface of the shoe, but I claim constructing the shoe with a detached flange, secured as described, so that the side and front flanges shall firmly fasten the shoe to the hoof, as set forth.

POLYGONAL SURFACES IN TIMBER—By Elias Unger, of Dayton, O.: I do not claim the movable table or the revolving face plate, nor the securing of timber between standards, as such are well known.

But I claim securing the timber to be dressed between two clamps on traversing carriages, by means of eccentric pins, as described, so that the faces or surfaces dressed by the cutter may have any desired angle with the axis of the piece, for the purposes set forth.

CLEANSING HAIR AND FEATHERS FROM INSECTS, &C.—By Wm. Wisdom, of Cleveland, O.: I disclaim to be the originator of sal soda as a purifying agent, but I claim purifying hair and feathers by destroying all noxious insects or infectious matter contained therein, by subjecting the same to a vapor bath of chlorine gas after the material has been cleansed by a bath of sal-soda, as specified.

GOLD PENS—By E. H. Bard & H. H. Wilson, of Philadelphia, Pa.: We do not claim the employment of flat nibs when composed of two pieces, as such pens have been heretofore made.

We claim the construction of metallic pens having the form of the semi-cylindrical barrel combined with the angular diverging planes by compressing the metal between corresponding shaped dies, as described.

SEPARATING ALCOHOL FROM WATER AND OTHER HEAVIER FLUIDS—By B. F. Greenough, of Cincinnati, Ohio: I claim the separating of alcohol and its compounds of parts of different specific gravities by means of the pressure of a column of such liquids, thereby causing what I denominate the Hydrostatic Displacement, as set forth.

SHINGLE MACHINE—By B. F. Stevens & Walter Kidder, of Lowell, Mass.: We claim, first, the combination of the movable side bars with the shaving knives and cams, arranged as set forth.

Second, the combination of the sliding arms carrying the riving knife with the driver, as set forth.

FOLDING BUREAU OR WARDROBE BEDSTEADS—By A. E. Botter, of New York City: I do not claim a bedstead arranged so that it can be closed or folded, and represent or imitate, when closed or folded, a bureau or other piece of furniture, irrespective of the peculiar arrangement of the parts.

But I claim the peculiar construction of the bedstead, as shown, viz., having the two parts connected by hinges, connected to a chest by hinges, by which construction the bedstead may be folded or shut up during the day, occupying but little room, and resembling a piece of room furniture, and unfolded at night when desired for use; the chest being provided either with drawers or a crib for children, as set forth.

[We noticed this invention on page 28 of this Volume Sci. Am.]

SELF-ACTING MACHINES FOR WEIGHING GRAIN—By I. D. Garlick, of Lyons, N. Y.: I claim the auxiliary gate, when combined with the loaded bent lever and cam catch, or their equivalents, which act upon the steelyard so as to lift shortly before the weight of grain in the weighing box becomes sufficient to raise it, as set forth.

I also claim suspending the weighing box in the frame by means of a rack pinion and loaded lever, whereby it is made to slide up and down within said frame at each weighing, and to produce the movements as described.

I also claim the arrangement and combination of the bent cam lever, the pin on the frame, and the curved elastic rod connecting said lever with the lid, for the purpose of opening the lid at each descent of the weighing box within the frame, and again closing it by the ascent thereof, as set forth.

I also claim the suspended hopper, in combination with the vibrating lever, arranged as set forth.

I also claim the combination of the notches and catch wire, with the elastic shoe and pin of the lever, arranged in such a manner that said lever is successively set free from the notch Q, catch, and notch R, respectively, by the ascent, descent, and second ascent of the steelyard, as set forth.

I also claim the adjustable cam catch, as described, in combination with the shouldered rod, for the purpose set forth.

I also claim the slotted rod, in combination with the vibratory lever, when arranged in such a manner that the ascent of the lever will raise the gate, and hook the catch over the pin of the steelyard, but will not disturb the gate in its descent, as described.

I also claim the arrangement and combination of the adjustable notched and perforated disc, the coupling pins, index, arm, and stop, as set forth.

STEAM BOILERS—By C. F. Sibbald, of Philadelphia, Pa.: I claim the fire box, deflecting plates, fire surface, and water surface, as constructed, and the whole arranged as set forth.

Also, the additional steam chamber placed below the water surface and behind the fire box, and connected to the main steam chamber by a pipe passing through the smoke stack, as set forth.

SEWING MACHINES—By S. C. Blodgett, of Georgetown, Mass. (assignor to Chas. Morey, of Boston, Mass., and Morey, assignor to Nehemiah Hunt, of Boston, Mass.); I do not limit my improvement to the employment of all or either of such mechanical contrivances for moving either of the needles or the cloth, as specified, as others well known as mechanical equivalents may be substituted for them. Neither do I confine my improvement to the precise form or forms of arrangement or arrangements of all or any of its parts, as circumstances may vary the same without changing the nature of the invention.

I claim the formation of sewing in cloth, or other material, by the interlooping of two threads by the conjoint action of two needles, in such manner that each needle shall be made to carry a loop of thread through a loop formed by the other needle, and through the cloth whereby one thread serves as a binding thread to the other, as described.

TIME REGISTERS FOR SHEWING THE DAY OF THE WEEK AND MONTH—By Wm. H. Akins, (assignor to W. T. Huntington), of Ithaca, N. Y.: I claim, first, the particular arrangement of the months, with their appropriate number, of days, as described, and for the purpose described, commencing Feb. 1st, 2nd, and 3rd, and so on for 28 days only, and then all of the other months in their regular order with their appropriate number of days for the whole year (with the February first mentioned and having the 28 days). Then again, February having 29 days and also 8 or or 10 days of another March, at the last end of the paper, and within which 8 or 10 days the machine must be wound up in every bisextile, or leap year and requiring to be wound up in the first, second, and third years, after leap year during February having the 29 days and before the 29th day, thereof.

Second, the arrangement and combined action of the rollers, showing the day of the week and drawing up the paper exhibiting the month and day of the month in their regular order, as set forth, the paper after it is drawn between the rollers, being disposed of by winding it upon the roller, by means of a weight, or spring, as described.

PICK AXES—By J. C. Conklin, of Peekskill, N. Y. (assignor to D. Tompkins, of North Harverstraw, N.Y., and D. F. Tompkins, of New York City: I do not claim extending the main bar through the center of the eye of the pick axe, neither do I claim the braces which secure the handle; but I claim the combination of the said bar with the braces and the loops, as set forth.

FOLDING SEIDLITZ POWDERS—By Wm. A. Martin, of Brooklyn, N. Y. (assignor to W. Watson & Peter Van Zandt, of New York City): I claim the bars moved by the means shown, or any analogous devices for folding the paper, as specified.

Second, I claim the frame with its cutters and block, in combination with the beds on which the paper lies, to divide the papers containing the powder and fold the ends against the ends of the blocks, as described.

DESIGNS.

COOKING STOVE—By Winslow Ames, of Nashua, N. H. (assignor to Hartshorn, Ames & Co., of Boston, Mass.

PARLOR STOVE—By James Wager, Volney Richmond, and Harvey Smith, of Troy, N. Y.

CYDINDER COAL STOVE—By Jas. Wager, Volney, Richmond, and Harvey Smith, of Troy, N. Y.

[NOTE—This is the longest list of claims which has been issued for some months: eight of the application were made through the Scientific American Patent Agency.]

Reform in the Patent Laws.

MESSRS. EDITORS—The subject of the amendment of the Patent Laws is, I see by your paper, about to be brought forward once more.

The present laws, with a few judicious amendments, would be doubtless the best and most complete in the world, and I am glad to learn that you intend pointing out the remedies for the errors now existing.

While the subject is under consideration I would call your attention to the injustice which is done to European inventors (who may be desirous of introducing their inventions into this country), by the very high tax imposed upon them as patent fees—an Englishman having to pay $500, and other Europeans $300. This scarcely accords with the liberality of the American character. The argument that it would cost an American as much to secure a patent in Europe, is not a sound one—for the European Governments charge all applicants alike. If the fees for all foreigners were reduced to $100, very many Patents would be applied for, and many more useful inventions would be introduced here; the business of the Patent Office would be somewhat increased, but its income would also be very greatly increased.

GEO. M. KNEVITT.

[The suggestions of our correspondent are well worthy of attention. We have advocated the same measure in former numbers of the "Scientific American," and would be pleased if the Commissioner of Patents would recommend the subject to Congress. Our American inventors have no objections, and no prejudices to offer against such measures, for they do not look upon worthy foreign inventors with any jealousy: our inventors have minds which soar above such petty feelings. They also like to see every good foreign invention get fair play, and for the love which they have for their country, they like to see new and useful inventions introduced, irrespective of the land from whence they come.

(For the Scientific American.)

Tunnage of Ships—Lake Vessels.

With great interest I have read the letter of J. W. Griffiths to the Secretary of the Treasury, on the subject of the "Tunnage of Ships;" and in my opinion the adoption of the mode of admeasurement suggested in that letter is eminently calculated to promote every interest connected with Commerce, and would most fully guarantee an open sea and flowing sail to the restive genius of nautical enterprise in every field of adventure. Through the kindness of Mr. Griffiths, being favored with a perusal of Capt. Moorsom's book referred to, it is refreshing to observe the superior adaptation and usefulness of the rule which our countryman proposes, in science, simplicity, and brevity. To be sure, it will demand a more extensive knowledge of mathematics than some of our political surveyors at present possess to compute tunnage from the model or draft, and for this reason the law would tend to elevate the functionaries of Government, and advance the knowledge of shipbuilders themselves. But the rule proposed would be simple, and highly useful in determining the weight of cargoes, and ought to be familiar, to every enterprising builder already.

Having myself built some of the sharpest and fleetest coasting vessels for the Lake Trade to be found in any waters on the globe, I have had to stem a torrent of mulish opposition, far more stubborn in the encounter than all the difficulties of modelling and accomplishing the end in view,—based on the doctrine that tunnage *is* tunnage, or, that the Government measure shows the vessel's capability, and consequently her value. But the fact is, that when you cut down the buoyancy, or displacement of your model to 48, 50, or 60 per cent. to obtain speed, your vessel being estimated by dimensions instead of displacement, by factors instead of contents (cubic), she is expected to sail, of course, and carry too, because she *tuns* so much! Let us only be free to choose what shape, form, or proportion of bulk we shall prefer to give to the shell of our cargo, with no check but utility, in the light which an American understands the term,—and we ask no more to secure the maximum of man's power on the grand highway of nations. In Griffith's "Manual" you will find some account of the "Manitowoc Clipper," alias "Mary Stockton," modeled and built by the writer at this place. This vessel has made but two trips from Chicago to Buffalo with wheat. The first trip she made the passage down in less than four days sailing time, and the last she occupied but 84 hours, (distance 1025 miles fair courses.) On the first trip she ran through Lake Huron (245 miles, the shortest running course) in 15 hours, averaging 16 ⅓ miles per hour—part of the time ran 18 miles. This vessel registers 349 tuns, and carries 12,700 bushels of wheat on an even draught of nine feet water. She is my first effort to combine speed, light draught, and utility in this trade. I can see a little further but would prefer to have the vessel's register show her true capacity. Science cannot gain by deceit. Truth is right and right is victory.

Yours, W. W. BATES.

Manitowoc, Wis., Dec. 15, 1853.

Interesting to Ship Masters.

In the case of Potter vs. Pettis, the Supreme Court of Rhode Island has recently decided that vessels have a right to use a warp in getting in and out of the harbor of a navigable river, and to extend the warp across the entire channel; but on the approach of another vessel it is the duty of the vessel using the warp to take notice of such approach, and so to lower the warp as to give a free passage through the ordinary travelled part of the channel, and to indicate to the approaching vessel the point intended for her passage. The approaching party is not bound to pass at the point indicated, but may pass at a different point if he honestly thinks it can be done without interference, but in such case he will be liable for the damage which ensues, unless he can prove that he disregarded the notice of the other vessel in the bona fide belief that he could so pass without damage to it, and the burthen of proving this will be upon him.

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New Inventions.

Bending Sheet Metal.

Solomon G. Booth, of New York City, has invented an improvement in machinery for bending or corrugating sheet metal, to make the beams known as "Montgomery's Patent Sheet Metal Beam," or for forming, on sheet metal, corrugations of greater depth than can be formed by any means now in use. The machinery employed consists of a swage and die, and the nature of the invention consists in forming the die in two or more parts fitted to work one within the other, so as to make the corrugations of any required depth, without breaking or in any way injuring the sheet metal. It also consists in a certain arrangement of the mechanism which operates the dies whereby the different parts of the die are enabled to be conveniently brought into operation successively upon the metal. A patent has been applied for.

Stone Sawing Machinery.

Joseph Greely, 2nd, of Nashua, N.H., has applied for a patent upon an improvement in machinery for sawing stone, which consists in the employment, as a saw for dividing stone into slabs, of a disc or plate of metal, which has a series of burrs of a thickness more than one-half of the thickness of the plate, sunk in opposite sides thereof, so as to be flush with it, and attached thereto by screws or other devices, which pass through their axes. These burrs are so arranged that all protrude the same distance beyond the periphery of the disc, and when caused to rotate by being moved in contact with the stone they cut it away to the width of the disc to which they are attached, thus dividing it.

Improved Planing Machine.

Joseph Osgood, of Brockport, N. Y., has invented an improvement in planing machines, which consists in the use of an elastic face attached to each cutter stock, and so arranged as to press upon the board to be planed, and prevent the cutters from working too deep into the board or plank. These elastic faces yield so as to allow any slivers or shavings to pass from the cutting edge of one cutter to that of the other, thus preventing the board from being marred, as is often the case when the stationary mouth-piece is used. The cutter stocks are rendered adjustable, so that they may surface equally boards varying in thickness. The inventor has applied for a patent.

Bee Hive.

Dewalt Fouse, of Williamsburg, Penn., has invented an improvement in Bee Hives, consisting in placing three sections on top of each other and holding them together by ledges serving to render the joints between them watertight. The bottom boards of the lower section are inclined so as to allow the dirt and refuse of the hive to be more readily discharged. The sections are separated by slats from each other, the top section consisting of four small boxes having no bottoms. Either section can thus be removed independently of the other. The inventor has taken steps to obtain a patent.

Prairie Plow.

Gardner A. Bruce, of Mechanicsburg, Ill., has invented an improved Prairie Plow, on which he has applied for a patent. His improvements consist in connecting the axles of the wheels upon the beams, loosely with it and the adjusting lever, by means of a jointed revolving rod, over which the beam can be adjusted freely, and upon which the adjusting lever is sustained. This rod passes loosely up through the beam, being connected to the adjusting lever by a loose joint, which allows the axle to have the necessary movements in the path of a horizontal circle, independent of the beam and lever, while changing the line of draught or turning curves.

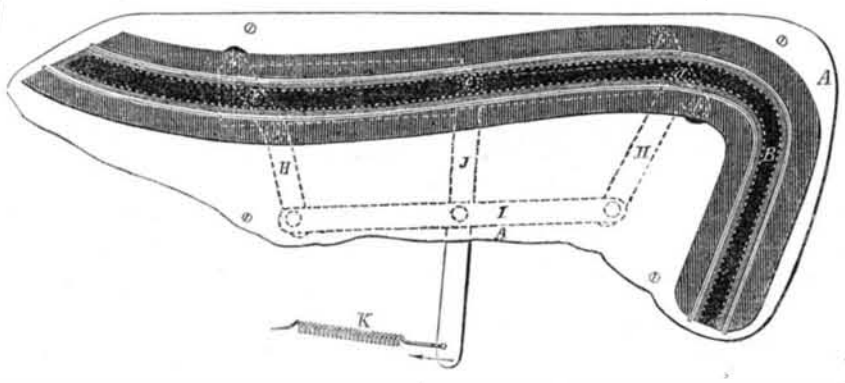
Improvements in Piano Fortes.

G. L. Wild, of Baltimore, Md., has invented an improvement in Pianos and other musical instruments of a similar kind, on which he has applied for a patent. The invention consists in the use of screws, or screws and levers combined, instead of the ordinary tuning pins, and in so arranging said screws, that the necessity of winding the strings upon them is avoided. A loose ferrule is placed upon the lower portion of the screw for grasping the string and also for preventing the string from coming in contact with it, and wearing it as the instrument is being tuned.

Electric Clock.

Alex. Hall of Ohio, has invented an Electric or Telegraphic Clock, the object of which, is to secure a uniformity of time at railroad stations. As we shall publish an illustration of this clock soon, we defer a description until that time.

IMPROVED ATTACHMENT FOR PIANOS.---Figure 2.



The engravings herewith presented are illustrations of Albert T. Corliss' improvement in Pianoforte Attachments, denominated by him the Swell Mute Attachment, a notice of which was published by us four weeks since.

Figure 1 is a perspective view, and fig. 2 is a plan view. The same letters refer to like parts.

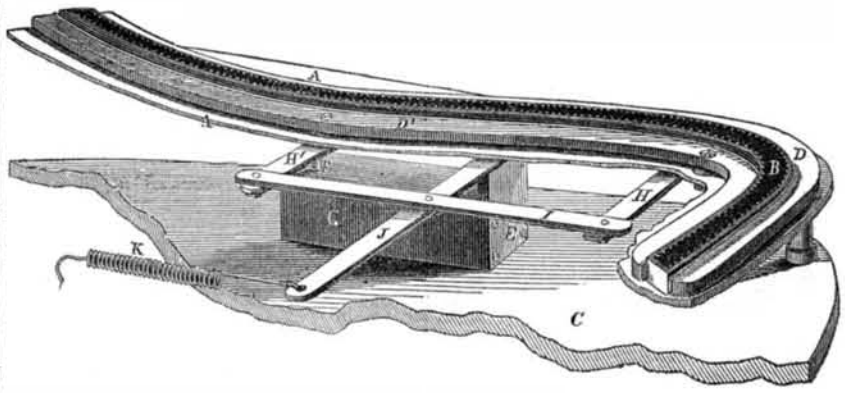
The object of this invention is to hold the tone of the instrument in perfect subjection to the performer, and produce effects on the piano corresponding with the effects produced by the swell on the organ—the crescendo and diminuendo.

A represents part of the sounding-board of a piano; B is the bridge, and C the bottom of the case. D D are clamps so arranged within the instrument, and so controlled by suitable mechanism that the performer may, at pleasure, cause them to press upon both sides of the bridge and hold it in such a manner as to control the vibration of the sounding-board, and thus regulate the tone. These clamps, which constitute the novelty of the invention, and the principal part of the mechanism by which they are operated, are all supported by an iron elbow-piece, E, and a standard, F, both secured to a block, G, which rests upon and is secured to the bottom of the case. The elbow-piece, E, carries an upright-pivot, *a*, which forms the fulcrum of a horizontal lever, H, and the top part of the standard, F, forms the fulcrum of another lever, H. Both of these fulcra are exactly under the center of the bridge; and each of the levers is connected by the pivots, *b b*, on opposite sides of and at equal distances from its fulcrum, with the two mutes, D D, which are supported by the levers, whose pivots, *b b*, pass through openings in the sounding-board. By moving the levers the two clamps are removed entirely from the bridge so as not to touch it, or are made to press with equal force upon it.

The two levers have such a relation to each other that when connected together by a link-rod, I, they move together and cause all parts of the mutes to bear the same relation to the bridge. The link rod, I, is connected at about the middle of its length with a horizontal lever, J, whose fulcrum is a pivot, *c*, secured in the elbow piece, B. This lever, J, has a coiled spring, K, applied to it in such a way as to pull it in the direction of the arrow shown in fig. 2, and thus operate upon the levers, H H, to make them draw the mutes away from the bridge. It is intended to be connected with a pedal so that the performer may at pleasure cause the mutes to bear upon the bridge with any required amount of pressure.

The inventor is a pianoforte maker, and is employed in the manufactory of Andrews & Robinson, Portland, Maine, at which place all communications of inquiry should be addressed to him.

Figure 2.



Tenoning Bedstead Rails.

T. R. & G. Bailey of Lockport, N. Y. have invented an improvement in machines for cutting the tenons on bedstead rails, on which they have made application for a patent. The invention consists in a peculiar arrangement of a cutter and chuck, to facilitate the operation of tenoning bedstead rails, and to give the tenon a form which shall render its lock with the mortise more secure.

Gas Burner.

Andrew Mayer, of Phil. Pa. has applied for a patent on an improved Gas Burner. The novelty of the invention consists in the mode of arranging and fitting the regulating valves, which are applied to gas burners to regulate the flow and consumption of the gas. Owing to the minuteness and delicacy of these valves, it has always been difficult to apply them to the burner in such a way as to have their perfect operation insured, but this invention is intended to overcome the difficulty.

Reaping Machine Sickles.

We have received a letter from Henry Green, of Ottawa, Ill., in which he states that *he* is the inventor of the form of sickle referred to by by James M. Thomas, in his communication, which appeared in the "Scientific American," on page 107, and not B. Murray, as therein stated. He has sent us a sketch of this sickle, and says, "they have been made in this manner for three years."

Singular Phenomena.

The "Belfast Journal" says that in a portion of the Penobscot River, a short distance above Prospect Ferry, where the river widens to the breadth of about a mile, a great commotion was discovered in the water several months since, so that the surface was much disturbed, and stones and earth seemed to be thrown up from the bottom. This upboiling still continues at intervals, and experiments show that at least an acre of the river bed has sunk from a depth of seven to a depth of fourteen fathoms. A sulphuric gas is emitted from the water during its periods of Commotion, and it is said that two distinct shocks of an earthquake have occurred since the commencement of the phenomena. These disturbances are undoubtedly of volcanic origin, though the phenomenon is very remarkable for this region.

Regulation of Public Clocks in Boston.

Prof. Horsford, of Cambridge, Mass., has proposed to the Common Council of Boston, a new plan for regulating "time-pieces" in and about Boston.

On the cupola of the State House of Boston, which is fortunately so high that a signal made at its top, with a properly colored object of moderate magnitude, may be seen from many points, and by steamers and vessels leaving the harbor, and from the surrounding suburbs and country, embracing an area of some ten miles radius, it is proposed to erect fixtures for dropping a dark colored ball, every day, at noon precisely. At five minutes before noon, the ball is to be run up to the top of its rod, and there secured by a device. At noon precisely, the ball is to be relieved by an electro-magnetic apparatus, designed by Messrs. Farmer & Batchelder.

Accurate time is sent from the Cambridge Observatory, to Boston, twice every week, and a plan like that recommended, has been found of great utility in London, where similar signals, are employed in the Strand.

Documentary History of New York.

We are indebted to Henry S. Randall, Esq., State Superintendent of Schools, for a copy of the "Documentary History of New York."—This is a great favor to us, as it contains much matter of deep interest, relating to the history of steam navigation, and we are confident that no paper in our country has more claims to this kind of donations. We were indebted to Dr. O'Callaghan, the able historian, for some of the proof sheets of this work relating to Fulton's first steamboat, during the time we were publishing articles on steam navigation, for this he will ever have our gratitude, and Mr. Randall we will ever regard as a true friend to the spread of useful information, as we shall have frequent occasions to refer to these volumes in order to convey useful and rare information to our people.

A Secret Telegraph.

The Olympic Academy of Vicenza, Venice has publicly declared the invention of Termeschini, by which messages may be transmitted secretly, to be perfectly successful. The results of the inquiry show:

"First, that the apparatus of Termeschini may be applied to Morse's telegraph; secondly, that when the dispatch is sent secretly it can only be received so, any fraud in that respect being subject to immediate detection; thirdly, that secrecy may be suspended or applied at pleasure. The report of the commission is highly eulogistic of the invention."—[Ex.

[Wonderful invention truly. "When the dispatch is sent secretly it can only be received so." This is bright. Are not all telegraph messages sent and received secretly. The operators at both ends of a line, by an understanding, can transmit, at any time, a message understood by themselves only.

The Fire Annihilator Again.

Secretary Dobbin, of the Navy Department, with Commodore Morris and other distinguished gentlemen were present to-day at the Navy Yard, to witness the trial of Phillip's Fire Annihilator. A wooden building near the yard was set on fire and the Annihilators applied, but the building was destroyed in a short time, thereby showing that no reliance can be placed upon these instruments to extinguish a conflagration.

We copy the above from the "Sunday [Dispatch."

Commander Ingraham.

Capt. Henry W. Morris has been detached from the rendezvous at New York and ordered to proceed to the Mediterranean to relieve Commander Ingraham, in command of the sloop-of-war St. Louis. The return of Commander Ingraham to the States is occasioned by the precarious state of his health.

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Scientific American.

NEW YORK, JANUARY 7, 1854.

The Year that is Gone.

"The bell strikes one, we take no note of time
Save from the hours now fled."

The Year Eighteen Hundred and Fifty-three has closed,—it is now with the eternity of the past, and its moments can never return. At such a time as this—the opening of another year—everything around us is suggestive of the propriety and wisdom of retracing in memory the road over which we have travelled since the first of last January. Time is divided by Divinity into days and seasons; and every period, like the annual revolution of our planet around its great Luminary, is like a mile-stone set up on the highway of time, to tell how far we have journeyed on the pathway of life.—Every person is sent into this world endowed with powers to perform certain duties, and is responsible for their fulfillment. Every newspaper and periodical has, it may truly be said, a public life, a specific existence, duties to perform, and purposes to accomplish. The "Scientific American" cannot plead an exemption from the frailties of mortality,—imperfection is written upon all the handiworks of man. We wish we had done better than we have: this feeling inspires us with an honest desire, and a fervent resolve to do better during the ever changing present, which is our future.

In taking a retrospective survey of the progress of invention, science, and art, as presented to the world through our columns during the year that is gone, much has been done to excite pleasure, and more to call forth gratitude. We cannot enumerate at present, in our brief space, all the new inventions and discoveries we have presented, but to show what we have done, and the position which the "Scientific American" maintains, as the Repertory of American Inventions, and the most popular Journal of Science in our country, we find that in one single month—that of January, 1853—its pages were illustrated with cuts of no less than seventeen new inventions, and many other useful subjects, the explanatory figures amounting to no less than sixty-four engravings—being more than two for each day in that month. During the month referred to, we illustrated the old and new plans of the "Ericsson" engines, discussed the subject of Hot-air versus Steam, and enunciated those scientific deductions which time and experiment have verified to the very letter.

Maintaining the character of a Universal Encyclopedia, every branch of art, science, and manufacture, has contributed something to the treasury of our knowledge. Saw Mills, Cast-iron Pavements, Steam Engines, Artesian Wells, Spark Arresters, Grain Cleaners and Planters, Reaping and Mowing Machines, numerous Railroad Inventions, Fire Arms, Ventilating Apparatus, Planing, Carving, and Mortising Machines; Chucks for Lathes, Stave Cutters, Power Looms, Boilers, Tinsmiths' Machines, Lamps, Sewing Machines, Entomology, Quartz Crushing Machines, &c. &c.—have all been illustrated in our columns; in short, we find that merely to name every machine and every subject illustrated, would fill too many of our columns. We name the above in order that our constant readers, who have bound volumes, as well as our new subscribers, may take a survey of the past along with us.

It is wise to look back and see what others have done as well as ourselves, and from the present, take the next step with a higher aim, and a more determined purpose. Those who never look back derive but little good from experience—they are liable to commit errors at every new step.

The field of invention and discovery is still broad and extensive, and it lies out before us, open and inviting to every son of genius and toil. From the past we have learned much, and honorable are the names of inventors that come down to us on the page of last year's history.

We hope and trust that we shall have a still more brilliant galaxy of inventions, discoveries and improvements to present to the world during the present, than any of the years that are past. American inventors and men of science! the cause is entrusted to you; we have every confidence that it is committed to those who will *do their duty.*

A Happy New Year.

To our readers and correspondents we send our Annual Congratulations,—we wish you all "A Happy New Year." We thank you for the many favors and acts of kindness which we have received at your hands, and for the good-will you have continually manifested towards the "Scientific American. Before and since it was established, many efforts had been made to publish a paper ostensibly devoted to the same objects, but all ended in disaster to those who made the attempts. The want of proper and extensive information, or the want of principle in themselves, we cannot tell which, may have been the cause of failure,—the public confidence we know they never obtained. Our people, at least such readers as we have, are of the class which cannot be "pleased with a rattle and tickled with a straw."

For our success we are indebted to you, our subscribers; from year to year you have held out the hand of encouragement and welcome, and you have enlisted your friends to share the pleasure and benefits derived from your expeperience.

When we commenced the "Scientific American" we resolved to be honest, diligent, and independent in conducting it, and to speak out upon all subjects with the candor and freedom of true American Citizens. To-day we can look in the face of every reader, and experience the consolation of never having proven recreant to these principles: we have been true to you and you have been true to us.

From the very first, the "Scientific American" was hailed as the popular Expositor of Science and American Inventions, and every year since has witnessed a great and increasing circulation, improvements in its matter, and in the quality and number of its illustrations; and it now stands as it always has, at the head of all such periodicals. We do not say this by way of boasting, but we could not use any other language and speak the truth.

When we commenced this Volume we increased the edition over four thousand copies, to meet the anticipated increased demand from new subscribers. Our hopes have not been disappointed: our circulation has increased even beyond our expectations. This imposes on us stronger obligations and more powerful claims.

Great as is our circulation now, from what it was, still it has not one-fourth the circulation which it should have among such a large population as that of our great Republic. We believe that no paper in our country does more good; its matter is useful for all time, and is instructive to both old and young.

The present is a good time to subscribe; and no young mechanic, or young man who has a taste for science, can do better than commence the New Year by becoming a subscriber. There are subjects for discussion presented in every number of the "Scientific American," which may profitably engage the calm and careful examination of individuals, families, and societies for several nights during the long winter evenings. We are now prepared to fill all orders, and we are confident that every person who becomes a subscriber does the *very best* thing to enable him to spend "A Happy New Year."

Flimsy Buildings.

It is a disgrace to many of our architects that they either seem not to know or care about the strength of the buildings which they erect. Every severe storm of wind or heavy fall of snow, is sure to bring us accounts of fallen houses and crushed roofs. On the 17th ult. the dome of a theatre in St. Louis, fell into the interior of the building, in consequence of an accumulation of snow upon it. A few hours before it fell the place was densely filled with human beings, and had it fallen then some hundreds of lives would have been lost. On the 25th ult. the steeple, 218 feet high, of the Reformed Dutch Church at Kingston, N. Y., was blown down, crushing in the roof and doing other damage. A number of houses were also blown down on the same evening in the vicinity of this city. During the past summer the steeples of two churches in Williamsburgh were blown down during a severe gale of wind, as were likewise a number ot houses. We have no excuse to offer for those who erected any of the structures which were thus prostrated,—every one of them was insufficient in strength of materials or faulty in the combination of such materials. It is not enough for an architect to say "such and such size of timbers will stand the test of the severest gale of wind or the heaviest fall of snow." He should be scientific enough to know exactly the amount of strain on the square foot which they will be able to resist, and also to know the amount of such strain, exerted by the severest hurricane or the heaviest falls of snow. No profession requires a higher degree of intelligence, or a more thorough scientific and practical education than that of the architect. It has been demonstrated that a tremendous hurricane exerts a pressure of 46 lbs. 12 oz. on a square foot, but the gale of wind which occurred on the 25th inst., we are positive, did not exert a pressure of over 15 lbs. on the square foot. Now, in erecting a steeple, allowance should be made for the leverage of its whole length, and the number of pounds pressure, which the lower timbers have to sustain in resisting great storms. Is this ever done by the majority of our builders? When they know the strength of their timbers and the transverse strain they can sustain, they can easily calculate the size of timbers required, and how to combine them for any altitude of a steeple, to resist the wildest blasts and the fiercest hurricanes to which it may be exposed.

We hope this subject will receive more attention from our architects and builders than it hitherto has done. We saw the broken timbers of a steeple—costing $2,500 to build—sold for $35; they were torn into fibers,—not a sound piece left, over three feet long, out of the whole mass. An examination of them convinced us that if the lower timbers had been larger and of oak or yellow pine, instead of common white pine, the steeple would now be standing erect and stately, capable of resisting the fiercest gales which visit our vicinity.

Material for Paper.

"We have just examined," says the "Baltimore Sun," "several samples of paper made of reeds or cane, of a species which grows in great abundance in our Southern States; and also a sample made by the same process from white pine shavings. In such an age of invention as this, incredulity is not to be tolerated, therefore we submit, with the best possible grace, even to the white pine. The reed paper is quite a promising article. Another sample composed of rags and reeds, one-third of the former and two-thirds of the latter, is quite a fine article, and its value is estimated by the makers equal to that from rags, worth 12½ cents per pound. The paper from pine shavings is designed for wrapping or envelope paper; it was first bleached and then colored for that purpose, and is valued at 12½ cents per pound also. The inventors of it, B. A. Larender and Henry Lowe, of Baltimore, are sanguine that with proper apparatus, paper can be manufactured of reeds or wood, as the main staple, by their process, worth 12½ to 16 cents, and at a cost not exceeding 6¼ cents per pound."

[The best and cheapest material which we have yet seen, applied to the making of paper, is a fine sea grass thin in the blade and of great length. It is so abundant around some parts of our coasts, that millions of tuns of it can be obtained annually, the only expense being the gathering and carting it away. It will, from its very nature, make much better paper than cane or any of the straws of cereals—wheat and oats. Some samples of paper made from this material, exhibited to us, were really beautiful.

Paper can be manufactured from almost any vegetable materials, and the variety of plants and substances from which it has been made is very great. The ancient Egyptians made their paper from the *papyrus*, a reedy flag which grows on the banks of the Nile. The Chinese made paper from cotton and linen thousands of years ago.

For making the fine India Paper, the material employed by the Chinese is the interior bark of a sort of mulberry tree. The Chinese also make paper from the rice plant. Paper has been made from the husks of Indian corn and from various kinds of wood.

We have seen in a number of exchanges, an account of the successful manufacture of beautiful white paper from straw by M. Millier, a French chemist. This discovery, we presume, is only for an improvement in the manufacture of such paper, we have seen paper made from straw as white as any made from rags. Chlorine and sulphuric acid will bleach the darkest straw color, into a pure white.

The whole question of making paper economically does not depend on the practicability of making it from canes, corn stalks, or any substance composed of vegetable fiber, but the cost of making it. To this let every effort of the paper manufacturer and chemist be directed, for no greater benefit could be conferred upon our people, than the reduction of the price of printing paper. Cheap paper makes cheap books and newspapers—the staff and the stay of an intelligent people, and the great bulwarks of American freedom.

Competitors for the Prizes.

The following are the names of the successful competitors for the prizes offered by us together with their residences and number of subscribers furnished by each:—

I.	J. N. SCOFIELD,	Columbia, S. C.,	139,	$100
II.	BENJ. RANKIN,	Louisville, Ky.,	116,	$75
III.	A. HAMMOND,	Jacksonville, Ill.,	105,	$50
IV.	C. COLLIER,	Indianopolis, Ind.,	83,	$45
V.	N. YOUNG,	Lancaster, Ohio,	74,	$40
VI.	T. P. ROBINSON,	Detroit. Mich.,	72,	$35
VII.	T. H. CHILDS,	St. Louis, Mo..	70,	$30
VIII.	D. M. SECHLER,	Ironton, Ohio,	67,	$25
IX.	JOHN GARST,	Dayton, Ohio,	62,	$20
X.	J. THOMPSON,	Nashville, Tenn.,	58,	$15
XI.	J. J. CONLEY,	Richmond, Ind.,	57,	$10
XII.	O. C. HALL,	N. Groton, N. H.,	52,	$5

Our friends whose names are announced above will please to accept our congratulations upon the success which they so justly merit, and we beg to inform them that the amount to which each is entitled, will be forwarded immediately upon receipt of their orders.

We cannot withhold the expression of our gratitude to those unsuccessful competitors who have done so nobly in extending the circulation of the "Scientific American." Their efforts have been directed in a good work, and we hope they will only gain courage to renew their efforts on another occasion. Doubtless some of them could have easily added a few more names, thus securing a prize. In connection with this announcement we will take occasion to notice some of our very particular friends who have objected to our offering prizes as unnecessary to the success of a journal of the character of the "Scientific American."

They seem to think we are lowering our dignity as publishers in adopting such an appliance. We do not know of a popular journal in our wide spread country which does not employ more or less canvassing agents for procuring subscriptions, we have discarded this system entirely, as in too many instances the public as well as the publishers have been made to suffer by it. In offering prizes we enlist the services of mechanics and trusty citizens, twelve of whom, as in the present instance, are well paid for their efforts, while each stands a fair and honorable chance of benefitting himself. Those of our friends who object to the prize system are not obliged to compete for them, therefore we hope they will not object to the efforts of others who feel disposed to enter into the competition for our prizes, while at the same time our circulation is thereby increased. We do not expect to please everybody, neither do we care to have our readers cavil at our management. As long as the paper pleases them we hope they will take it and recommend their friends to do likewise—when it fails to meet their approbation they should drop it at once.

Orders for the Scientific American left at the Mechanic's Institute Baltimore, will be promptly attended to by our faithful agent, E. G. Simms, Esq.

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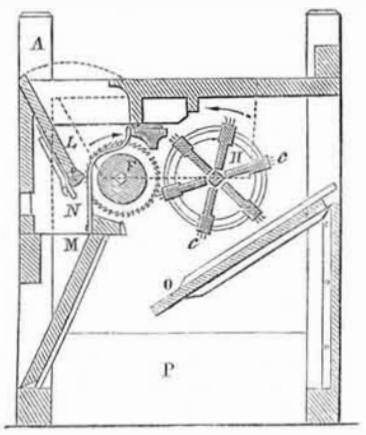
Cotton Cleaning.—The seeds of cotton adhere to the fiber with great tenacity, and until these are removed, it cannot be spun and made into threads for weaving. At one time the separating of the seed from the fiber was all performed by hand; the price of cotton then was about fifty cents per pound. This restricted its use, as the price was but little, if any, less than linen. The invention of a single machine completely revolutionized the whole business; this was the cotton gin of Whitney, of which figure 1 is a vertical section: and a model of which is in the Crystal Palace. The cotton gin is composed of a series of circular saws, revolving on the spindle of a wooden roller in a box, between metal ribs, the saws draw in the cotton and scutch off the seeds between the ribs; a revolving brush roller behind the saws, strips off the cleaned cotton and acting as a fan, drives it out through a back spout into the cotton room. A is the frame; L is the box into which the uncleaned cotton is thrust; F the saw roller; H the brush roller with brushes *c c*; O is the slide board, and P the mote and seed box. The ribs are secured to a block at N, and M is another receptacle for dirt, seeds, &c., which are separated in front by the saws. The brush roller acts the part of a cleaner, as well as a fan.—The cotton gin has been much improved since the days of Whitney, but the principle in them all is the same as that embraced in his original one.

There are many at the north who have heard of the Cotton Gin that do not know the principle of its action nor the nature of its construction, the annexed figure will be instructive to them. There are others who have read of the cotton gin and know all about its construction and its inventor, Eli Whitney, and yet do not know that the fine "Sea Island Cotton" cannot be ginned by this machine, not but what it can separate the seeds from the cotton, but in doing so it would injure the fiber in such a manner as to destroy its value. The seeds of the Sea Island cotton do not adhere so tenaciously as those of the short staple, and this happily enables it to be cleaned by the "roller gin," figure 2. It is composed of two rollers, between which the uncleaned cotton is fed in, and the seed separated from it without saws, or scutching between ribs. *a b* are the two rollers, and *c* is the cotton. This is a sectional view, and is principally designed for exhibiting the difference between the two gins for cleaning different kinds of cotton. There are many modifications of the roller gin. Some gins have a top roller covered with leather, and an under one made of metal; others have the roller made with zig zag grooves, &c., on their peripheries. A good gin for cleaning the Sea Island cotton rapidly and safely, is still a great desideratum, we believe.

There are many kinds of cotton, which have different names, according to the locality in which they are grown. Georgia has long been distinguished for the excellent quality of its cotton, but it has not produced as much as some other States.

In the south-western part of that State the seed is planted about the beginning and onward to the latter part of March, and in some cold springs as late as the middle of April. The average period is the middle of March. It is planted in drills four feet apart, and the stalks are calculated to be ten inches distant. After it comes through the surface of the earth, it looks like buckwheat, until it is eight inches high, after which it branches off like the wild teasel.—It stands, at full growth, about four feet high in Georgia, but in the rich Mississippi bottoms it attains to the hight of six and eight feet. Each stalk averages about thirty bolls (some have over one hundred.) The blossom lasts about three days—one day white, one red, one purple, and then falls off in six parts, like the shuck of a walnut, or like the liths of an opened orange. When the boll matures it opens and lets out the staple to view something like our milk weed. It commences opening in July, and is ready to harvest when enough of bolls are opened to warrant picking. New bolls continue to be developed as the first ones ripen, like roses in our gardens, and the plants are picked over about half a dozen times. It is pulled off by hand, and comes out of the boll easily. A good hand will pick from two to three hundred pounds per day. At the early stage of picking it is not an uncommon thing for one planter to challenge another to test the smartness of their negroes. The picking of cotton is a light and agreable kind of labor to the negroes, and a first-rate cotton-picker is a no small hero in the eyes of his fellows, and quite an object of interest and pride to his master. It is related that a plain but enthusiastic cotton-planter, after hearing and seeing Strakosch perform, with flying fingers, one of his favorite pieces on the piano, burst out in unrestrained admiration with—"What a glorious cotton-picker he would make."

SAW GIN.

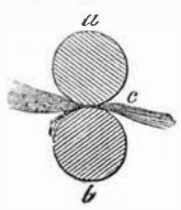


Various kinds of cotton are named according to localities, such as Alabama, Tennessee, Texas, New Orleans, Sea Island, Upland, &c., &c. There is a very great difference in the quality of cotton grown in one State and in one district. The Sea Island and the Upland are very different.

The Upland cotton is shorter in the staple than the Sea Island, but there are some very fine kinds of it. The mixing of the different staples, to produce a good yarn, requires great practice and skill, and in respect to its cultivation, no plant has received greater attention.

There can be no doubt but the great increase of the consumption of cotton can be traced to the invention of the Cotton-Gin—the simple machine which is here presented to illustrate this article. Before the invention of the Cotton-Gin, it took a female one whole day to clean one pound of cotton, and the best machine—the roller-gin with fluted rolls—which was in use in 1788, for cleaning cotton, could only finish about thirty pounds in twelve hours.—The great consumption of cotton for manufacturing is attributable to its cheapness; but it never would have become a cheap fibrous material by the old processes of cleaning, and our country never would have become a great cotton country, if the Cotton-Gin had not been invented.

ROLLER GIN.



It was early discovered by Tench Coxe, Esq., and a number of enterprising gentlemen of the South, that any amount of cotton could be raised in the Carolinas and Georgia, but owing to the difficulty of cleaning it, a great obstacle stood in the path of its extensive cultivation. In 1792, while the continent of Europe resounded only with the tread of armed hosts in battle array; England, separated from the strife, became the workshop of the world, and the demand for her manufactures was greater than she could supply; so likewise was the demand for cotton. It was at this juncture that a mechanical genius arose to meet, it may be said, the wants of the world. Eli Whitney, a native of Worcester, Mass., a highly educated and ingenious man, while a guest with the widow of General Greene, in Savannah, Geo., was appealed to by the lady to devote his attention to the construction of a machine to gin cotton, as it was in vain to think of raising it for the market while the means to clean it were so inefficient. Whitney at once commenced experimenting, and after much study and toil completed his Cotton Gin in the early part of 1793. At its first exhibition, all who saw it were astonished at its power, for it separated more cotton from the seed in one hour than one man could do by the old method, in many months. Whitney, in 1802, when presenting a petition to the Legislature of South Carolina, respecting his treatment by some men who opposed his just claims, said, "my machine enables one man to do the work of a thousand."

At one period the cultivation of the Sea Island was confined to a string of islands stretching from Georgetown, in South Carolina, to the St. Mary's River, in Georgia, a distance of about 200 miles, embracing a belt of coast not over 15 miles wide; but in a letter addressed to the "Scientific American," and published on page 123, Vol. 8, by H. L. Weeks, of Columbus, Geo., it is stated that in Thomas County, in that State, there is a planter who has grown Sea Island cotton for 21 years, at a distance of 125 miles from the Atlantic coast. In the fertile counties of Middle and West Florida, more Sea Island cotton is grown than any other kind.

Nankin Cotton—The color of pure Nankin cotton goods, is the natural color of the cotton. Its native place is China, but it has been cultivated in Georgia, and goods have been made from it at some of the factories in Rhode Island. We have been informed that its cultivation has been abandoned, however, on account of its unprolific nature.

Red Cotton—During the past year some cotton of a red color was received in Manchester, from Aubeokuta, in Africa, but it was brought to that place from the interior of the country, where it was said to be grown in great quantities, and was very prolific. We have never seen any of this kind of cotton, but that such a peculiar quality of it was grown in Africa, is stated in Bancroft's old work on the subject of Dyeing, which was printed before our Revolution.

Manchourian Cotton.—On the eve of the departure of the American Japan Expedition, we directed the attention of the President, to obtaining some information about the Manchourian cotton, described in the travels of Huc. We hope the expedition obtained definite information respecting that cotton which is grown in a country lying as far north as the city of New York.

Literature Devoted to Cotton Planting.—The "American Cotton Planter," a monthly magazine, edited by Dr. Cloud, of La Place, Ala., is a very excellent periodical, from the pages of which we have derived much information. "The Cotton Plant" is another paper published at Washington, D. C., and devoted to interests of the cotton culture. "De Bows' Review" is a powerful and able magazine; the "Southern Cultivator," published at Augusta, Geo., contains a vast amount of information about cotton; in short, the majority of our Southern cotemporaries devote much attention to this great Southern agricultural product. In one of our Southern exchanges, however, we were surprised by the advocacy of opinions which, according to our judgment, would prove highly injurious to our cotton planters. It was no less than a recommendation to cultivate less in order to raise the price. This might answer for one or two years, but it would certainly lead to the cultivation of a greater quantity in other countries; the true policy of our planters is to cultivate as much as they can, at the least expense to themselves.

Western Locomotives.

We have received a lettter from T. S. Reed, of Milwaukie, who states that there is a locomotive shop in that city called the "Menomonee Machine Shop,' which has built a number of excellent locomotives—eight at least—which are now running on the Milwaukie and Mississippi Railroad.

We have also received a communication from Theodore P. Robinson, of Detroit, Mich., in which he informs us that the "Michigan Central Railroad Company" built a heavy freight locomotive four years ago, and have built four freight and one passenger engine since that period. He says, "they are superior to the Eastern engines in strength, durability, and finish." The motive power of said railroad is under the superintendance of S. F. Newhall.

Steam Engines---Experiments at the Crystal Palace.

In No. 15, of the "Scientific American" we published the correspondence between Mr. Page, and Joseph E. Holmes, Superintendent of Machinery. In connection with that, the following are tables of the correct results kindly furnished by Mr. Holmes:—

CORLISS & NIGHTINGALE'S ENGINE.

Time when the facts were noted	H.M. 7 00	H.M. 7 10	H.M. 7 20	H.M. 7 30	H.M. 7 40	H.M. 7 50	H.M. 8 00
No. lbs. pressure of steam to the square inch	42	32	27	22	15	10½	7
No. of revolutions of the fly wheel or stroke of piston	37	37	37	37	37	37	37
Time when the facts were noted	H.M. 8 10	H.M. 8 15	H.M. 8 20	H.M. 8 25	H.M. 8 30	H.M. 8 35	H.M. 8 39
No. lbs. pressure of steam to the square inch	4½	3	2	1½	1	¾	0
No. of revolutions of the fly wheel or strokes of piston	36	34	25	18	14	7stp'd	

LAWRENCE MACHINE SHOP ENGINE.

Time when the facts were nated	H.M. 7 00	H.M. 7 10	H.M. 7 20	H.M. 7 30	H.M. 7 40	H.M. 7 50	H.M. 8 00
No. lbs. pressure of steam to the square inch	42	32	27	32	15	1½0	7
No. of revolutions of the fly wheel or stroke of piston	46	46	45	43	40	34	36
Time when the facts were noted	H.M. 8 10	H.M. 8 15	H.M. 8 20	H.M. 8 25	H.M. 8 30	R.M. 8 35	H.M. 8 45
No. lbs. pressure of steam to the square inch	4½	3	2	1½	1	¾	0
No. of revolutiens of the fly wheel or strokes of piston	33	21	17	13	10	7stp'd	

Foreign Scientific Memoranda.

Death of an Inventor—Capt. Warner, an English inventor, whose experiments in destructive missiles created a great deal of sensation a few years ago, died suddenly, in London, a few weeks since. He was in high hopes of coming to an arrangement with the Turkish government for the use of his invention, and it is presumed that over-excitement had operated fatally. He has left a wife and seven children without provision. It is believed the secret of his invention is among his papers. He stated that it would be found there. He bore the rank of Master in the Navy.

Steamship Persia—This new ship for the Cunard Line, is fast approaching completion, at Glasgow. She will be 45 feet broad in the beam, and in length 360 feet; her tunnage will be 3,060. The engines will have hundred inch cylinders with a ten feet stroke.

Steamer Golden Age—This fine American steamer, with over-head beam engines, which carried a cargo from this port to Liverpool, has left the latter city on her voyage to Australia. She took with her 160 passengers; in passing down the Mersey she astonished all the onlookers by her great speed.

Gold Extracted without Quicksilver.—J. Harris, of London, has written a letter to the "Mining Journal," giving the following account of extracting gold from metallic ores without the use of mercury. The mines of Reichenstein, in Silesia, abandoned for more than four centuries, have been recently opened with advantage, in consequence of the application on a large scale of a method invented by Prof. Plattner, for separating gold from the waste of arsenical ores. The ore of Reichenstein is an arsenical pyrites, containing about 200 grains of gold in the ton. The ore is roasted in a reverberatory furnace, surmounted by a large condensing chamber, in which the arsenious acid is condensed as fast as it is volatized. There then remains on the floor of the furnace oxyde of iron, mixed with a certain quantity of arsenic, together with the whole of the gold. This is placed in a vessel so arranged that a current of chlorine can be passed through it, by which the gold and iron are taken up, and afterwards separated from the residiuum by the aid of a certain quantity of water, and the gold is afterwards precipitated from this solution by sulphuretted hydrogen. To prevent the admixture of iron at this stage, a small dose of hydrochloric acid is introduced. The auriferous compound having been separated from the liquor, is washed and heated in an open porcelain crucible, to drive off the sulphur, by which the gold is reduced to the metallic stage by fluxing in the usual manner.

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TO CORRESPONDENTS.

J. C.,of N. Y.—What would you do with the gases of water, if you obtained them by solar heat—which you cannot do by the largest lens you can employ? Hydrogen gas is of no value at all in the arts, exeept in combination with carbon. Do not expend any money on such a project.

W. F., of Mass.—You have not taken the compressible quality of air into your calculations. The use of one fluid to act upon another, as a propulsive power, will amount to about one half of loss, compression developes its latent heat, then the water condenses it, thus forming a partial vacuum, which will retard the progress of the vessel.

J. A., of C. W.—We do not like the conical stone mill: your wheel is perhaps as good as any of the same nature. There is not much difference between it and others—and as you are acquainted with it, some expense and trouble may be saved by getting another like it. If we were in your place, however, we would get an outside discharge wheel, for the new mill.

R. G., of N. Y.—We cannot properly answer your last inquiry,in regard to getting the rotary files made. There is, we think, a file making establishment at Sing Sing-N. Y., and we advise you to apply to the proprietor for the information desired. His name we do not know.

R. Forman, of West Point, Bath Springs, P.O,, Tenn, wishes information in regard to the best plans of saw mills in use; manufacturers will find it to their advantage to send him their business circulars.

F. H. S., of Md—We have carefully noted the contents of your letter in regard to the rule of the Patent Office. The views are undoubtedly correct, and we hope you will be able to apply them in your own case.

J. Y., of ——.—Cheap soap depends on the price of materials, and the work which the soap has to perform. As your materials contain a great deal of grease, you can make a very good soap for your purpose, by dissolving common hard soap by hot water in a barrel. and for every pound of soap add half a pound sal soda, dissolving them all together. A little practice will enable you to use it judiciously according to the amount of grease or dirt in your wool; the free soda dissolves the free grease. Some manufacturers use nothing but weak soda ley for this purpose.

S. H., of Ky.—Your method of straining saws by means of a screw nut connecting the rods is old and very well known; we fail to discover any patentable novelty in your arrangement.

R. A. N., of Tenn.—We discover no new feature in your alleged improvement in grates; substantially the same thing has long been known. We are pleased to learn that your city is fast becoming interested in machine manufacturing, there is no reason why the South and West should not eventually become active competitors for this branch of trade.

J. B. A., of N. Y.—We cannot give you better advice, in re-setting your boilers, than to recommend the building of two or three fire bridges like those represented in No. 18, Vol. 7, Sci. Am.; any mason will set them for you. We are not acquainted with any person particularly devoted to boiler setting.

T. C. W., of Pa.—We have had models almost precisely similar to your sketch in our office. You would not stand the most remote chance of getting a patent; we advise you to abandon the idea of making an application.

G. W. W., of Ind.—We are unable to find any novelty in your description of a reaper and raker. We could not advise you to apply for a patent.

D. P., of Vt.—In July, 1850, Addison Everett, of Middlefield, Mass., secured a patent for a wooden bowl turning machine; an engraving of it was published in No. 52, Vol. 5, Sci. Am.

W. N., of N. J.—"Constructing a saw in the form of an endless belt running round two drums" is not a new invention.

E. B., of N. Y.—We can discover but very little novelty in your machine for crushing; in its construction it closely resembles other machines where balls are used in basins. We think a very limited claim can be secured, but is hardly worth an application

O. P. S., of Ohio—Your long communications are quite too much for us, therefore you will please to withhold them in future. We have not the necessary time to devote to them.

J. L. F., of Miss.—Fine iron filings made into a paste with salammoniac, dissolved in water, is a cement employed for filling the seams of iron vessels, such as boilers, but red and white lead mixed with fine sand, some putty, and a little oil, make a very excellent cement.

B. Y., of Pa.—Your communication is placed on file in this office; we do not discover anything useful in the engine, it is too complicated in its construction.

C. W. G., of Ct.—We have never seen a rotary engine constructed in the manner shown in your sketch; you had better try it, as we doubt its goodness.

L. W. H., of N. Y.—An air-tight trunk for re-action water wheels, is not new, and this, as we understand by your letter, is what you claim: such trunks are already covered by a patent.

F. C., of Mass.—Your improvement is new; many times a simple improvement in small tools is useful and valuable to the inventor. Perhaps we are justified in saying that too little attention is paid to this branch of mechanical contrivances.

T. M. J., of Iowa—We have seen a scraper made in the same manner as you describe; the handles, instead of being fastened permanently at the sides, extend forward to the bail, and the scraper allowed to turn on pivots. You cannot secure a patent for it.

J. B. W., of Mich.—Make the body of your emery wheel of cast-iron, and have it truly turned, cover the periphery with copper, and use the emery on this; the emery sinks into the copper. Scott's is the best work on millwrighting in print—a good work, up to the present practice is much wanted.

W. C. D., of Fla.—We thank you for bringing the past to remembrance: we have the copy and hope to give it attention soon.

A. R. H., of Lake Superior—It is not a new thing to smelt iron and ores by the flame of fuel, in a stack apart from the fire chamber. We give the advice freely. You will see a furnace for this purpose, illustrated in our last Volume.

J. J. T., of Ky.—You will find the contents of your cylinder by multiplying half the circumference by half the diameter, and this by the length; the circumference you will find by multiplying the diameter by 3·14159.

T. P. K., of Pa.—You are right about the rule to calculate the lever power, but the toggle gives out the power different from the common levers.

M. S., of N. Y.—The only invention we know of for "burning the wick of a candle," is to surround it with sperm or stearine. We are not sure that we understand you in respect to the clock, but if we do, the same thing is done in many clocks.

D. McC., of Ky.—Your engine is sufficient for all your purposes, but your boiler is defective, when it cannot supply over 20 lbs. pressure on the square inch. Take it down, and set it over again, the furnace is badly constructed.

G. & Co., of Boston.—We have not been able to obtain correct information of Mr. P. If you direct a letter to J. S. Sloan, of Sloansville, Floydsburg, Oldham Co., Ky., he will, we believe, be able to give you the desired information.

W. T. U., of Tenn.—We will soon attend to your request.

J. H., of Ill.—Yours has been received.

F. M. P., of N. Y.—You cannot estimate the horse power of a high pressure engine by the bore of the cylinder and length of stroke. The velocity of piston, and the pressure of steam on the square inch throughout the whole stroke, is the only way to arrive at a knowledge of its power.

Money received on account of Patent Office business for the week ending Saturday, Dec. 31:—

W. A. H., of Halifax, $50; O. B., of Ind., $30; J. T. B., of N. Y., $25; R. S. T., of N. C., $55; J. W. B., of Ark., $30; J. I., of O., $30; D. M. R., of N. H., $40; J. C. R., of N. Y., $10; B. V. B., of N. Y., $30; S. S. H., of N. Y., $20; G. M. C., of N. Y., $35; D. B. H., of S. C., $35; C. & S., of Mass., $30: J. H. B., of N. Y., $25; V. & K., of N. J., $30: S. G. B., of N. Y., $40.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday, Dec. 31:—

D. M. R., of N. H; B. F. McL., of O.; C. & S., of Mass., J. H. B., of N. Y.; S. S. H., of N. Y.; S. G. B., of N. Y.

LITERARY NOTICES.

THE GENESEE FARMER—This agricultural periodical, published every month at Rochester, N. Y., has no superior in our country. The Editor, Dr. Lee, is an able Agricultural Chemist, and a veteran in agricultural literature. Every number contains 40 royal octavo pages of closely printed matter, and illustrations of agricultural machines &c. Its subscription price is only 50 cents per annum. This magazine commences a new volume (15th), second series, and is to contain one-third more reading matter, and be otherwise much improved. It should have a million of subscribers, for its matter is always good, solid, scientific and practical.

GRAHAM'S MAGAZINE—For January, is received through Messrs. Dewitt & Davenport, of this city. It has a fine engraving of Clark Mills' Equestrian Statue of General Jackson, besides others of merit. The contributions are from well known authors. The number throughout is very fine. This Magazine is one of the very best now published and deserves to be well sustained.

PUTNAM for January has been received, it is as usual full of interesting matter. The publishers seem inclined to usher in the new year with a number which shall give promise of good things for the year to come.

HOT CORN is the title of a new book from the establishment of Messrs. Dewitt & Davenport. It is the republication in an enlarged form of the stories that have from time to time appeared in the "N. Y. Tribune," from the pen of Solon Robinson, Esq. The effect of this book cannot be other than good, and we commend it heartily to our readers.

HOUSEHOLD WORDS—This gem of Monthlies makes its regular appearance, freighted with the best of reading. Dickens, Leigh Hunt, and other eminent English writers, are its contributors. McElrath & Barker, American publishers, Spruce st, N. Y.

THE KNICKERBOCKER—This favorite Magazine loses none of its popularity, even though Harper's, Putnam's and Graham's are making so many friends. It is as bright and sparkling as ever and enjoys a host of admiring readers. Samuel Hueston, publisher, 139 Nassau street, N. Y.

AMERICAN AGRICULTURIST—An advertisement of this valuable journal of Practical Agriculture, appears in another column. It is a good publication.

Another number of the "Book of the World," Weick & Wieck, Philadelphia, publishers, has been received,—the illustrations are superb.

A Chapter of Suggestions, &c

PATENT LAWS, AND GUIDE TO INVENTORS—We publish and have for sale, the Patent Laws of the United States—the pamphlet contains not only the laws but all information touching the rules and regulations of the Patent office. Price 12 1-2 cents per copy.

RECEIPTS—When money is paid at the office for subscriptions, a receipt for it will always be given, but when subscribers remit their money by mail, they may consider the arrival of the first paper a bonafide acknowledgment of the receipt of their funds.

BACK NUMBERS AND VOLUMES—In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement: Of Vols. 1, 2, 3, and 4—none. Of Vol. 5, all but six numbers, price, in sheets, $1; bound, $1,75. Of Vol. 6, all; price in sheets, $2; bound, $2,75. Of Vol. 7, all; price, in sheets, $2; bound, $2,75. Of Vol. 8, none comple, but about 30 numbers in sheets,, which will be sold at 50 cents per set; of Vol. 9, NONE.

GIVE INTELLIGIBLE DIRECTIONS—We often receive letters with money enclosed, requesting the paper sent for the amount of the enclosure, but no name of State given, and often with the name of the post-office also omitted. Persons should be careful to write their names plainly when they address publishers, and to name the post office at which they wish to receive their paper, and the State in which the post-office is located.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

PATENTEES—Remember we are always willing to execute and publish engravings of your inventions, providing they are on interesting subjects, and have never appeared in any other publication. No engravings are inserted in our columns that have appeared in any other journal in this country, and we must be permitted to have the engravings executed to suit our own columns in size and style. Barely the expense of the engraving is charged by us, and the wood-cuts may be claimed by the inventor, and subsequently used to advantage in other journals.

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American and Foreign Patent Agency.

IMPORTANT TO INVENTORS.—The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express, or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

PIG IRON—The subscriber has always on hand a stock of the best brands of American and Scotch Pig Iron, for sale at the lowest market price. G. O. ROBERTSON, 135 Water st, cor. Pine, N. Y. 13 14eow

1854.—MICH, CENTRAL RAILROAD Line.—D. N. WHITING, Freight Agent for Railroads and Steamboats—Plymouth Rock and Western World,—and also General Forwarder, will forward freight of any kind, by any mode of conveyance, to any destination, with despatch and at the lowest rates; has trucks and machinery (having been a practical machinist); has all the skill necessary for the safe and expeditious handling of any machine or heavy article, such as Locomotives, Steam Engines and Boilers, Engine Lathes, Safes, &c. &c. Mark packages "care D. W. Whiting, Buffalo:" goods thus consigned take precedence with the above boats in all cases. 1*

LOCOMOTIVES FOR SALE—Two Locomotives, Engines, and Tenders, made to order for five foot gauge (but which are not required at present as the road is not ready to receive them); 16 inch cylinder by 20 in. stroke; two pair drivers; one engine 6 feet diameter and the other 5 1-2 feet dia., outsider cylinders—have a large proportion of boiler, and are expected to be economical working engines. Will be sold on very favorable terms and are now ready for delivery. For further particulars apply to CHAS. W. COPELAND, No. 64 Broadway, N. Y. 17 4*

ELEVENTH VOLUME OF THE AMERICAN AGRICULTURIST—The leading Weekly Agricultural Paper in the United States, containing in each weekly number sixteen large quarto pages, and furnishing a great variety of the earliest, most reliable, and practical information on all subjects connected with Farming, Planting, Gardening, Fruit Growing, Stock-Breeding, &c., including also correct Weekly Reports of the latest market prices of Stock, and Farm Produce, which are invaluable to the Farmer. Terms—To Single Subscribers, $2 a year (1 for six months); to clubs of three $1,67 each; of five, 1,60 each: of ten, $1,50 each, and of twenty, $1,25 each. N. B.—Specimen Copies always sent free to all forwarding their names and post office to the Publishers. Responsible Agents wanted in all parts of the Union, to whom good commissions will be paid. Published by ALLEN & CO., 189 Waterst, New York. 1*

DYER—A situation is wanted by an experienced Cotton Dyer, who for ten years has conducted the Skein and Warp Dyeing in some of the most extensive manufacturing companies in America. Can give the best of references. Address letters, post paid, to R. M., this office. 16 2*

EAGLE FOUNDRY—Steam Engine and Millwright Establishment for sale.—The subscriber offers for sale his well-known establishment on Gadsden's Wharf, Charleston, S. C., convenient to the river for steamboat work or shipping and receiving machinery, &c. The workshop, tools, patterns, &c., are in good order and calculated for the manufacture of all kinds of engines, railroad work, and machinery of every description. For terms, which will be made easy, and possession given immediately, apply to JAMES McLEISH.
15 6* Charleston, S. C.

IRON DRILLS.—Portable drills for drilling iron.—They are the most simple and convenient drill in use, having a newly invented feed motion, simple and efficient in its operation. They are constructed of iron, and weigh 80 lbs. We can recommend them as a first rate article. Price $25. Address MUNN & CO., at this office.

TO MANUFACTURERS AND MILLERS—For sale, a valuable Mill Seat, within one mile of the city of Troy, N. Y. It comprises two four story Brick Flouring Mills, each of which have four run of stone, and are capable of doing the best of grinding. Two wood dwelling houses, and one barn, with considerable land adjoining the whole. The stream upon which the above seat is situated is known as the Poestenkill, and furnishes strong power of 22 feet head, so that the mills could be converted, if the purchaser wishes, into other branches of manufacture. The buildings are well situated, and the facilities a manufacturer would have are very great, owing to the position of Troy as a noted and increasing railroad center, and the accessibility to and from the city, of the property. The object of a sale is for partition among the heirs. For plans and further particulars apply to or address
14 4 T. M. C. BUCKLEY, Troy. N. Y.

SAVE YOUR FUEL—And have your Engine regulated at the same time. Tremper's Spiral Governor and Steam Economizer can now be furnished to any amount, and of the best materials and manufacture. Orders should be addressed to Newburgh, N. Y., instead of Buffalo, as heretofore, and will be promptly attended to. JOHN TREMPER. 13 5*

MINING MACHINERY—Of most approved construction, furnished by FRED'K COOK & CO, Hudson Machine Works, Hudson, N. Y. 15 6m

IRON FOUNDERS' MATERIALS. viz: Pulverized Sea Coal, Black Lead, Soapstone, Anthracite and Charcoal Facings. Also, best imported Fire Bricks, Fire Clay, Fire Sand, and Moulding Sand, for sale by
G. O. ROBERTSON,
13 13eow 135 Water street, corner of Pine.

EUROPEAN PATENTS.—MESSRS. MUNN & CO. pay especial attention to the procuring of Patents in foreign countries, and are prepared to secure patents in all nations where Patent Laws exist. We have our own special agents in the chief European cities; this enables us to communicate directly with Patent Departments, and to save much time and expense to applicants

1853. WOODWORTH'S PATENT PLANING, Tonguing, Grooving, Rabeting, and Moulding machine.—Ninety-nine hundredths of all the planed lumber used in our large cities and towns continues to be dressed with Woodworth's Patent Machines. Price from $150 to $800. Two machines are at the Crystal Palace. For rights in all parts of New York and Northern Pennsylvania, apply to JOHN GIBSON, Planing Mills, Albany, N. Y. 1 amtf

WEIGHING AND PACKING MACHINE—This machine is particularly adapted for the weighing and packing of ground spices, coffee, teas, saleratus, cream tartar, British luster, arrowroot, drugs, prepared flour, farina, starch, cocoa, oat meal, yeast powders, seeds, snuff, ground herbs, or any like material, which may require to be put in packages, from ounces to pounds. Its advantages over the old method of packing by hand, are manifest. One of these machines will, with the aid of one person, weigh accurately, and pack neatly, from 4 to 5,000 packages per day. It requires very little power to run it, and is not liable to get out of repair. Having purchased the exclusive right to manufacture and sell throughout the United States, we are prepared to execute orders for the machines or sale of sectional rights, on reasonable terms. N. B. HARRIS & Co., Proprietors of the Excelsior Steam Spice Mills, Philadelphia, Pa. 12 13

THE NEW HYDROPATHIC COOK BOOK, with Three Hundred Receipes for Cooking on Hygienic Principles, containing also a Philosophical Exposition of the Relations of Food to Health; the Chemical Elements and Proximate Constitution of Alimentary Principles; the Nutritive Properties of all kinds of Aliments; the Relative Value of Vegetable and Animal Substances; the Selection and Preservation of Dietetic Materials, &c., &c. By R. T. Trall, M. D. With One Hundred Illustrative Engravings. 1 vol., 12mo. Price, delivered free, 87 cents. Published by FOWLER & WELLS, No. 131 Nassau st., New York. Boston, No. 142 Washington st.; Philadelphia, No. 231 Arch st. 14 4.

BAKER'S IMPROVED STEAM BOILER FURnace, as used at the Crystal Palace, &c. Apply to J. AMORY, 28 State st, Boston, General Agent. 11 tf

HUDSON MACHINE WORKS and Iron Foundry—at Hudson City, N. Y., are prepared to contract for castings for railroads, bridges, buildings, gas pipes and posts, water pipe, cast-iron ornamental floors, cannon, &c. Steam engines and boilers, high and low pressure, sugar mills, Cornish lifting and forcing pumps for mines; stamps, mortars, and mining machinery;—also superior hydraulic pumps and presses, and superior machinists' tools made to order. Especial attention given to the making of patent machines. Orders by mail will receive prompt attention,
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C. B. HUTCHINSON'S PATENT STAVE Cutting Machines—The best in use, and applicable alike to thick and thin staves, for barrels, hogsheads, &c.; also his Head Cutting and Turning, and Stave Jointing and Crozing Machines. This machinery reduces the expense of manufacturing at least fifty per cent. For machines or territorial rights, apply to C. B. HUTCHINSON & CO., Syracuse, N. Y. 2tf

ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic, Self-adjusting Conical Packing, Faber's Water Gauge, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc., etc.
CHARLES W. COPELAND,
7 13* Consulting Engineer, 64 Broadway.

NICHOLS' PATENT PARAGON SAFETY CANS and Glass Metallic-lined Lamps.—These beautiful glass lamps protect against breakage as well as against explosion. They are infinitely superior to all others. Orders addressed to the N. E. or Sandwich Glass Cos., Boston, Mass., will be promptly answered. 10 10*

THE NEW HAVEN MANUFACTURING CO.—New Haven, Conn., having purchased the entire right of E. Harrison's Flour and Grain Mill, for the United States and Territories, for the term of five years, are now prepared to furnish said mills at short notice. These mills are unequalled by any other mill in use, and will grind from 20 to 30 bushels per hour of fine meal, and will run 24 hours per day, without heating, as the mills are self-cooling. They weigh from 1400 to 1500 lbs., of the best French burr stone, 30 inches in diameter; snugly packed in a cast-iron frame, price of mill $200, packing $5. Terms cash. Further particulars can be had by addressing as above, post-paid, or to S. C. HILLS, agent N. H. M. Co., 12 Platt st., N. Y. 5 tf

NEW HAVEN MANUFACTURING COMPANY—Tool Builders, New Haven, Conn., (successors to Scranton & Parshley) have now on hand $25,000 worth of Machinists' Tools, consisting of power planers, to plane from 5 to 12 feet; slide lathes from 6 to 18 feet long; 3 size hand lathes, with or without shears; counter shafts to fit all sizes and kinds of universal chuck gear cutting engines; drill presses, index plates, bolt cutters, and 3 size slide rests. The Company are also manufacturing steam engines. All of the above tools are of the best quality, and are for sale at 25 per cent. less than any other tools in the market. Cuts and list of prices can be had by addressing as above, post-paid. Warehouse No. 12 Platt st., New York, S. C. HILLS, Agent N. H. Manufacturing Co. 5tf

PLANING, TONGUING, AND GROOVING—BEARDSLEE'S PATENT.—Practical operation of these Machines throughout every portion of the United States, in working all kinds of wood, has proved them to be superior to any and all others. The work they produce cannot be equalled by the hand plane. They work from 100 to 200 feet, lineal measure, per minute. One machine has planed over twenty millions of feet during the last two years, another more than twelve millions of of feet Spruce flooring in ten months. Working models can be seen at the Crystal Palace, where further information can be obtained, or of the the patentee at Albany, N. Y
1 tf GEO. W. BEARDSLEE.

A. B. ELY, Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs Munn & Co., Scientific American. 16tf

LEONARD'S MACHINERY DEPOT, 109, Pearl st., and 60 Beeaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinist's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also, a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting. P. A. LEONARD.
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39 1y

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MECHANICAL DRAWINGS—J. H. BAILEY. Mechanical or Architectural Drawings executed in all kinds of perspective. Office Tryon Row, No. 5, opposite the City Hall. 16 4*

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Scientific Museum.

Mortality of Cities.

Although there is stated to be an immense amount of pauperism in London, and consequently much suffering, it is a positive fact that the number of deaths in it annually is less in proportion to its inhabitants than that of the larger cities in our country. The following table is a list of the population, and mortality of London and four American cities for one quarter:—

MORTALITY OF JULY, AUGUST, AND SEPTEMBER.

Philadelphia	2,955	400,000	1 to 135½
New York,	7,529	550,000	1 to 73
Baltimore	1,610	180,000	1 to 112
Boston,	1,391	150,000	1 to 108
London,	12,918	2,200,000	1 to 169

The mortality in New York is truly frightful for the above three months, but then they are the most sickly months in the whole year.—And beside this, there are other causes which contribute to this great excess of mortality over other cities. This is the port where the great mass of emigrants from all parts of the world land. Thousands of these poor people are weak and emaciated when they come here and arriving in a different climate from that of their native countries, they are liable to be stricken down suddenly by exposure to the sun, and are more subject to the attacks of prevailing diseases than the natives of this city. When so many were sun struck in this city last summer, very few Americans lost their lives—not one in fifty we believe—while no less than seven-tenths of the number were natives of Ireland. In proportion to the number of native and foreign inhabitants of New York, we are confident that there are ten deaths among the latter to one of the former. There is no city on our continent more healthy as it respects climate and local diseases. It might, however, be rendered much healthier by the better enforcement of one single sanitory measure, namely, keeping the streets clean and free from mud and dust.

Irrigation by Artesian Wells.

Between the rivers Neuces and Rio Grande, in Texas, there is a large extent of country, than which there is no finer grazing lands in the world, excepting at times when severe drouths visit it. During such periods—and they are frequent—the graziers have to drive their flocks to great distances, in search of water. In that quarter also, the cultivation of the soil cannot be accomplished, owing to such drouths. It is proposed to water some of these plains by artesian wells, one of which it is stated will be sufficient to supply 500 acres with a sufficiency of pure water for any number of animals, on that extent of land. We have seen it stated in some of our southern cotemporary journals, that a wealthy planter from San Antonia is now in Alabama securing implements and workmen for the purpose of sinking such wells in that part of the country of Texas which we have named; we hope the project will be eminently successful.

A New Piano.

It is well known that Liszt, considered by many the greatest pianist in the world, has withdrawn himself from public life for a year or two past. "Spiridion," the entertaining Paris correspondent of the "Boston Atlas," says his retirement was caused by dissatisfaction with the piano, it would no longer accomplish his desires. He has accordingly devoted all his energies to the production of a new instrument, and the best piano makers of Germany and Russia were employed in the task. The work is said to be accomplished, and "Spiridion" writes:—

"M. Alexandre wrote to him recently, informing him that he had succeeded in making the desired instrument. M. Listz flew hither. M. Alexandre's invention is not merely a piano, there are three finger boards susperposed one on the other, and which give to the player power of combining all the effects of a full orchestra; two of the finger boards are pianos, the other calls into existence flutes, clarionets, hautboys, violins, violincellos, human voices—everything, an organ, wind instruments, cord instruments. The piano may now join the stage coach, the signal telegraph, and the other discarded wonders of our ancestors. Its day is ending."

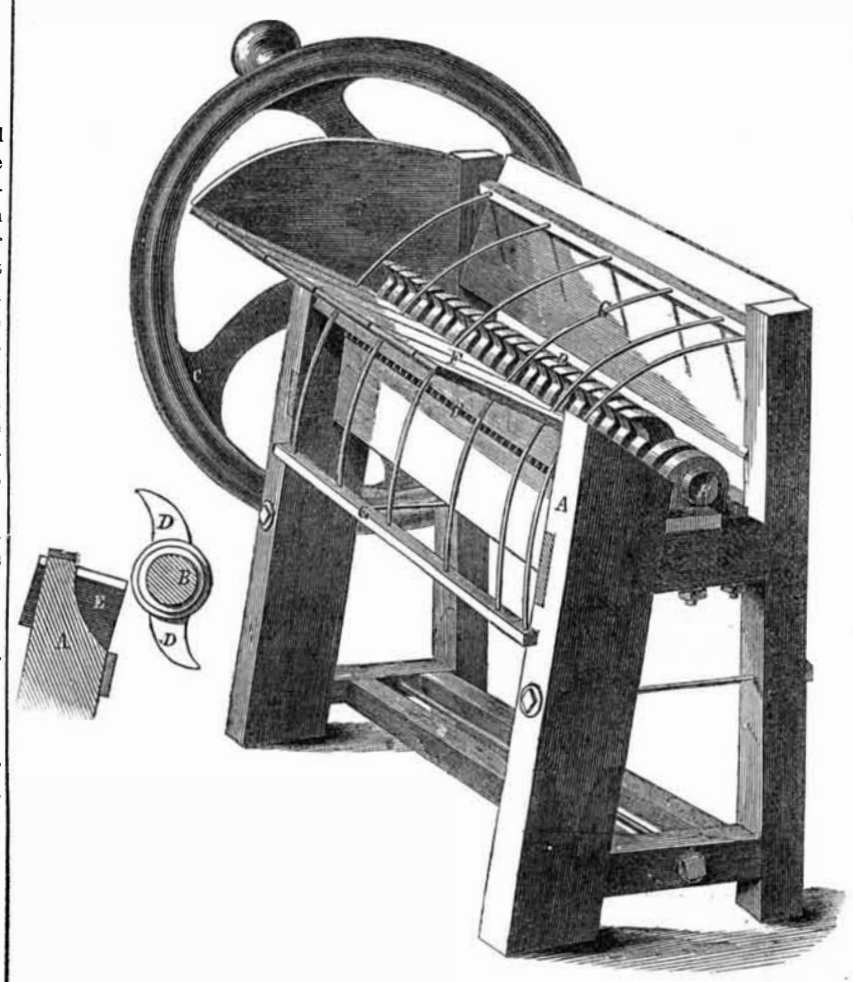
[The above has been extensively copied, but it is a piece of nonsense from beginning to end. Pianos were built twenty years ago combining the flute, clarionet, and some other instruments, but such a combined instrument is not a piano any more than a banjo is a violin. The piano as it is will never go the way of the signal telegraph any more than the violin. Such a hotch potch of an instrument may do very well to astonish the gawkies.

Guano.

The British Government has received official despatches from the Admiral commanding in the Pacific relative to the quantity of guano remaining upon the Chincha Islands. It is estimated that the available supply amounts to eight million six hundred thousand tons; but the Admiral imagines that the islands will be exhausted of saleable guano worth freighting to England in eight or nine years.

This is very significant information, it should incite our farmers to look for new fertilizers at home.

STRAW AND VEGETABLE CUTTER.



The engraving herewith presented is a perspective view of a Straw and Vegetable Cutter, patented Dec. 21st, 1852, by W. Gale, of Louisville, Ky., now residing in Troy, N. Y. The machine is of a novel construction and its operation is efficient.

A is the frame of the machine; B is the feeding shaft, turned by the balance crank, C, having upon it the spurs, D, which grasp the straw or vegetables, and press it against the stationary knives, E (see the small cut at the left). F is the feeding table, upon which the straw is thrown, the grate-fall, G, being elevated until the straw is thrown in, when it compresses it and carries it downward to the feeding hooks.

The knives are so constructed that when broken, the ends may be readily changed or new ones put in, in their stead, and they may also be ground with facility. We have witnessed the operation of this machine and think favorably of it. In simplicity of construction, and that great desideratum of agricultural implements, easiness of repair, we know of none superior. Any further information can be obtained by addressing the inventor as above.

Great Discovery—A Universal Telegraph.

The "Mining Journal" minutely describes the marvellous improvements effected by Mr. Wilkins in the electric telegraph, by which the system bids fair to be thoroughly revolutionized. Mr. Wilkins is a telegraph engineer of Hempstead, and has secured a patent for his extraordinary invention, which will be made available to the public by the Universal Electric Telegraph Company. The improvements for which Mr. Wilkins's electric telegraph will be distinguished are intended to meet all existing defects. It will form one of its very peculiar and striking characteristics, that instead of the message being, as at present, expounded often by guess, liable to be misunderstood or mistaken from variations of the index, or from many other causes, the message will be written by the telegraph instrument itself. By means of his singularly ingenious apparatus, the message leaves the telegraph written on paper by the instrument in clear and distinct characters, delivered in a continuous line and unvarying position. It is not even dependent, as was forly proposed, on the chemical action of the electric fluid on certain sensitive colors, but the machine will enable parties to perpetuate an accurate record of the message, the value of which, in all intercourse, as well in affairs of state as in all legal, monetary, and commercial transactions, is almost incalculable. The ingenuity is perfectly marvellous, which arranges the telegraphic apparatus to be worked by the electric current, so as to give motion to a marker, or tracer, and thereby impress, mark, or otherwise render visible, in a continuous line on paper, characters representing letters, words, and figures on the recording surface, which is kept constantly moving by means of clockwork, or other suitable machinery, while the characters are marked, or otherwise produced by the electric current, in a fixed manner, capable of being read upon it. By a contrivance of surpassing ingenuity the transmission of the message will be simultaneous to any number of radiating stations without the aid of intermediate operators, only one operator being required at each telegraph. This branch of improvement is effected by a delicate piece of machinery, the "Automaton Repeater," by means of which any number of towns, or places within the circle of construction, may be communicated with at the same moment by one and the same electric touch." Mr. Wilkins's plan is also remarkable for the extreme simplicity of the telegraph, for one wire will be sufficient, and in order to prevent the uncertainties which have impeded the development of the telegraphic system, he has devised a superior plan of insulators. It is calculated to insure the most perfect and unerring accuracy by the total absence of quivering points and needles, and by abstaining from the use of chemical preparations, always liable to mislead and very often to fail.—[New York Tribune.

We copy the above from the "Tribune," but we have seen the same article in a number of our daily papers. This surprises us not a little, as those papers have been in the habit for years past of receiving messages every day from all parts of our country, by just such a telegraph as that described above. It is nothing more nor less than the Morse Telegraph *as it is*, and of which there are 27,000 miles of wires erected in the United States. It is indeed a strange thing to us that the "London Mining Journal," which is partly devoted to the propagation of new discoveries, should be so ignorant of this American invention, but at the same time we must say that it appears more than strange to us, that such ignorance should be displayed in any paper in our country—it betrays great stupidity. It affords our people some evidence, however, of the length of time required, and the long round-about distance (from Washington to London and back again) which truth and scientific knowledge have to travel before it can enter the eyes or the ears of men devoted merely to light literature and politics—they cannot be trusted, in giving opinions about new claimed inventions.

Who the Mr. Wilkins mentioned above is, as having made the great discovery, we do not know, but we can tell him that if he reads Prof. Morse's re-issued patent, he will find he has been anticipated long ago, and that he is sailing under the false colors of being the inventor of that which belongs to an American.

Hints to Stock Raisers.

Mix occasionally one part of salt with four or five of wood ashes, and give it to your stock of all kinds during summer and winter. Green and fermentable food produces flatulency, and this mixture affords a remedy. It is said that if horses are liberally supplied with salt and clean wood ashes, they will neither be troubled with botts nor cholic.—[Connecticut Valley Farmer

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